FINAL REPORT FOR 834.1m

COMMUNITY ASSISTANCE PLANNING REPORT
NUMBER 88

A LAND USE MANAGEMENT PLAN FOR THE CHIWAUKEE PRAIRIE-CAROL BEACH AREA OF THE TOWN OF PLEASANT PRAIRIE

Prepared by the

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Prairie and the Kenosha County Office of Planning and Zoning Administration in 1981 proposed a planning program which would bring together the concerned public agencies and private interests in an effort to reconcile conflicting urban development and open space preservation objectives.

Acting in response to this proposal, the Commission submitted an application to the Wisconsin Coastal Management Council--the administering agency of the federal coastal management program in Wisconsin--for funding in the amount of $12,000 in support of such a planning program. In applying for the grant, the Commission agreed to provide an in-kind contribution equal to 20 percent of the estimated cost of the study. Both the Town of Pleasant Prairie and Kenosha County expressed support for the proposed study in letters to the Commission.

Upon notification of grant approval, the Regional Planning Commission, in turn, entered into a subcontract with the Town of Pleasant Prairie under which the town engineer and town planner assisted the Regional Planning Commission in the conduct of certain portions of the study. Under the subcontract, the Town received $4,800 of the available federal coastal management monies to support the work of the town planner and town engineer on the study, with the Town agreeing to provide matching monies in the amount of $1,200.

During the course of the planning program, the Wisconsin Department of Natural Resources applied for additional federal coastal management funds in the amount of $24,500 on behalf of the Regional Planning Commission, enabling the Commission to undertake certain additional work tasks--including an in-depth analysis of wetlands in the study area in terms of the wetland rezoning criteria set forth in Chapter NR 115 of the Wisconsin Administrative Code--the need for which became apparent as the program proceeded. The Regional Planning Commission provided an in-kind contribution equal to 35 percent of the cost of the additional work.

The planning program was conducted under the guidance of an advisory committee consisting of representatives of the Town of Pleasant Prairie, Kenosha County, the Wisconsin Department of Natural Resources, the U. S. Army Corps of Engineers, major affected landowners including the Wisconsin Electric Power Company and The Nature Conservancy, and citizen members. The full membership composition of this advisory committee is listed on the inside front cover of this report. The advisory committee meetings held during the course of the study provided the primary basis for the expression of public agency and private interest positions regarding the management of land use within the Carol Beach area and, ultimately, for the development of a land use management plan for the area.

PURPOSE OF THE PLANNING PROGRAM

The primary purpose of the Chiwaukee Prairie-Carol Beach area planning program was to develop a detailed land use management plan which reconciles valid but conflicting open space preservation and urban development objectives within the area through the active involvement of all major concerned public and private interests. The land use management plan prepared under this program identifies the areas within the study area which should be preserved and protected to maintain its important environmental qualities; identifies which of those areas should be preserved and protected through public land use regulation and which

should be preserved and protected through public or private acquisition; and identifies those concentrations of existing urban development and areas of potential urban development which should be served by public sanitary sewers and other urban services in a manner which is sensitive to the unique natural resource features of the area.

The plan is intended to guide the concerned local units and agencies of government in the provision of basic urban services and facilities--including, most importantly, public sanitary sewer service; to guide local, county, state, and federal units and agencies of government in the exercise of their respective land use and related regulatory responsibilities; to guide public agencies and private interests in the acquisition of additional environmentally significant open space lands; and to provide a framework within which private interests can formulate plans for additional development within the Carol Beach area.

It should be noted that the sanitary sewer service area recommendations of the land use management plan as set forth in this report are intended to constitute an amendment to the sewer service area recommendations contained in the regional water quality management plan. The recommendations of the regional plan are necessarily general and do not reflect detailed local planning considerations. The sanitary sewer service area recommendations of the Carol Beach management plan will, upon formal adoption by the concerned local and county governments and by the Regional Planning Commission itself, be used by both the Regional Planning Commission and the Wisconsin Department of Natural Resources in the review and approval of locally proposed sanitary sewer service extensions, as provided for under Section NR 110.08(4) of the Wisconsin Administrative Code.

SCHEME OF PRESENTATION

Following this introductory chapter, Chapter II of the report sets forth a descriptive analysis of the Chiwaukee Prairie-Carol Beach area, including inventory findings with respect to such important matters as wetlands, prairies, and platting activity. Chapter III describes the legal framework applicable to land use decision-making in the Chiwaukee Prairie-Carol Beach area, including federal and state wetland regulatory programs and county shoreland zoning requirements. Chapter IV describes the alternative land use management plans which were considered for the area, while Chapter V describes the recommended land use management plan. Chapter VI sets forth recommended public and private actions which will serve to implement the recommended land use management plan. The report concludes with a summary chapter.

Chapter II

INVENTORY FINDINGS

INTRODUCTION

The preparation of a land use management plan for any area requires consideration of the existing land use pattern and of the natural resource base of the area, of the existing and anticipated future population levels, and of the attendant demand for additional residential and other urban land; and of the physical suitability of the area to sustain additional urban development. Accordingly, this chapter describes the Chiwaukee Prairie-Carol Beach study area, providing information on population levels, land use and land ownership patterns, the natural resource base, Lake Michigan shoreline recession, the suitability of soils for urban development, and existing sewage disposal facilities and problems.

GENERAL DESCRIPTION OF THE STUDY AREA

The Chiwaukee Prairie-Carol Beach study area is located in the eastern portion of the Town of Pleasant Prairie, Kenosha County, and is bounded by Lake Michigan on the east; by the Wisconsin-Illinois state line on the south; by STH 32 and the Chicago & North Western Railway right-of-way on the west; and by 80th Street on the north. The study area encompasses 1,825 acres, or about 8 percent of the total area of the Town of Pleasant Prairie.

Vehicular access to the area is provided via STH 32, CTH T, CTH Q, and 116th Street. The study area is traversed in a north-south direction by the right-of-way of the Chicago & North Western Railway, which provides commuter-oriented passenger service between the Cities of Kenosha and Chicago, as well as railway freight service over this route.

No public or private centralized sanitary sewerage service is provided within the study area. The only public centralized water supply service is provided in the residential area located in the study area north of 90th Street. This service is provided by the Pleasant Prairie water utility, which obtains water on a wholesale basis from the Kenosha water utility. The only centralized private water supply service in the study area is provided by a small system which serves a residential subdivision located in the study area east of Sheridan Road and north of 116th Street.

POPULATION

Existing Population

According to the federal census, the resident population of the Chiwaukee Prairie-Carol Beach study area stood at 1,402 persons in 1980. This represents an increase of 286 persons, or 26 percent, over the 1970 study area population of 1,116. Population levels for the five subareas of the study area identified on Map 2 are presented in Table 1.

Table 1

POPULATION IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA: 1970 AND 1980

Subarea (see Map 1)	Population			
			Change: 1970-1980	
	1970	1980	Number	Percent
A	158	324	166	105.1
B	627	607	- 20	- 3.2
C	266	377	111	41.7
D	20	27	7	35.0
E	45	67	22	48.9
Total	1,116	1,402	286	25.6

Source: U. S. Bureau of the Census and SEWRPC.

In the formulation of a land use management plan for the study area, it must be recognized that the area is not only a part of the Kenosha metropolitan area, but is located between the Chicago and the Racine and Milwaukee metropolitan areas, thus complicating the urban development pressures on the area. Population trends for the City of Kenosha and the Towns of Pleasant Prairie and Somers--which together comprise the Kenosha Planning District, consisting of all that area of Kenosha County east of IH 94--are presented in Table 2. As indicated in this table, the population of the Kenosha Planning District increased from 66,105 persons in 1950 to 98,094 persons in 1970, an increase of about 32,000 persons, or almost 50 percent, during that 20-year period. In contrast, there was virtually no change in the population of the planning district between 1970 and 1980. The population of the City of Kenosha decreased slightly, while the populations of the Towns of Pleasant Prairie and Somers increased slightly during the last decade. In this respect, it should be noted that the population of the Kenosha Planning District actually decreased slightly from 1930 to 1940, during the Great Depression.

Future Population

The projection of probable future population levels for any geographic area is a difficult task, accompanied by uncertainties and subject to periodic revision as new information becomes available. The traditional practice followed in determining a future population level to utilize in physical development planning has been to prepare a single population forecast believed to be most representative of future conditions. This traditional approach works well in periods of social and economic stability, when historic trends can be anticipated to continue relatively unchanged over the plan design period. During periods of major change in social and economic conditions, however, when there is great uncertainty as to whether historic trends will continue, alternatives to this traditional approach may be required. One such alternative approach proposed in recent years, and utilized to a limited extent at the national level for public and quasi-public planning purposes, is termed "alternative futures." Under this approach, the development, test, and evaluation of alternative plans is based not upon a single, most probable forecast of future conditions, but upon a number of futures chosen to represent a range of future conditions which may be expected to occur over the plan design period.

Table 2

POPULATION OF THE KENOSHA PLANNING DISTRICT: SELECTED YEARS 1850-1980

Year	Population			
	City of Kenosha	Town of Pleasant Prairie	Town of Somers	Total
1850	3,818	959	680	5,457
1860	3,990	1,400	1,277	6,667
1870	4,309	1,377	1,359	7,045
1880	5,039	1,386	1,458	7,883
1890	6,532	1,646	1,632	9,810
1900	11,606	1,776	2,044	15,426
1910	21,371	3,217	1,788	26,376
1920	40,472	2,030	2,084	44,586
1930	50,262	3,457	3,046	56,765
1940	48,765	3,892	3,641	56,298
1950	54,368	6,207	5,530	66,105
1960	67,899	10,287	7,139	85,325
1970	78,805	12,019	7,270	98,094
1980	77,685	12,703	7,724	98,112

Source: U. S. Bureau of the Census and SEWRPC.

Recognizing the increasing uncertainty inherent in estimating future population levels, the Regional Planning Commission began incorporating the alternative futures approach into its planning program in the mid-1970's, the first known attempt to apply this approach to regional planning in the United States. In the exploration of alternative futures for the Southeastern Wisconsin Region, an attempt was made first to identify all those external factors that may be expected to directly or indirectly affect future development in the Region, together with the likely future range of prospects for these factors. Two alternative scenarios for regional growth and change, involving different assumptions regarding three major external factors--the cost and availability of energy, population lifestyles, and economic conditions--were thus defined. These scenarios represent opposite extremes of the future prospects identified for the external factors and, consequently, indicate relatively large potential differences in future population growth and in economic activity. The more optimistic scenario developed postulates moderate population and economic growth; the less optimistic scenario postulates a stable economy and a declining regional population. Two alternative regional land use plans, a centralized plan and a decentralized plan, were then developed for each of the two alternative future scenarios of external factors, thus providing, in effect, four alternative futures as a framework for physical development and planning in the Region.[1] Year 2000 population projections for the Kenosha Planning District--assuming centralized and decentralized population distributions under moderate growth and stable/declining growth scenarios--are presented in Table 3.[2]

The population levels anticipated under the moderate growth-centralized population distribution scenario are the basis for the Commission-adopted design year 2000 regional land use plan. Since the population levels in the regional land

[1]A detailed description of the four alternative futures is presented in SEWRPC Technical Report No. 25, Alternative Futures for Southeastern Wisconsin.

[2]The population projections presented in this chapter are based on the 1970 census.

Table 3

ANTICIPATED POPULATION CHANGES IN THE KENOSHA PLANNING DISTRICT UNDER FOUR GROWTH ALTERNATIVES: 1970-2000

Alternative Future Growth Scenario	Projected Population: 2000	Projected Change in Population 1970-2000	
		Persons	Percent
Moderate Growth Scenario			
Centralized Population Distribution.....	143,200	45,106	46.0
Decentralized Population Distribution...	162,800	64,706	66.0
Stable/Declining Growth Scenario			
Centralized Population Distribution.....	104,400	6,306	6.4
Decentralized Population Distribution...	96,800	- 1,294	- 1.3

Source: SEWRPC.

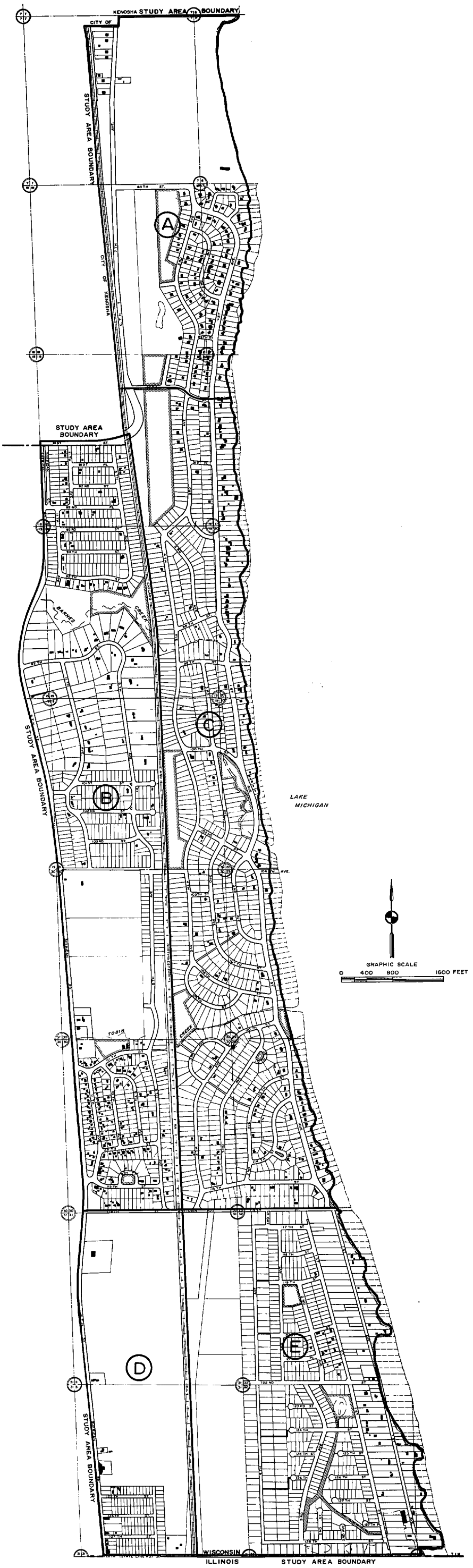
use plan are based upon the moderate growth-centralized population distribution scenario, the year 2000 population level for the Kenosha Planning District anticipated under that plan--143,200 persons--is significantly higher than the population levels that would be anticipated under a stable/declining growth scenario assuming either a centralized population distribution--104,400 persons--or a decentralized population distribution--96,800 persons. The adopted regional land use plan population level for the Kenosha Planning District is, however, significantly lower than the population of 162,800 persons which would be anticipated under the moderate growth scenario assuming a decentralized population distribution.

The regional land use plan anticipates a 1980 population of 114,400 persons for the Kenosha Planning District, an increase of 16,306 persons, or 17 percent, over the 1970 level. As noted above, however, there was virtually no change in the resident population of the Planning District between 1970 and 1980. The number of households in the Planning District, however, increased by 5,083, or 17 percent--from 29,663 households in 1970 to 34,746 households in 1980. The actual number of households closely approximates the figure of 35,300 anticipated in the regional land use plan. Thus, the number of households in the Planning District increased almost as anticipated between 1970 and 1980, while growth in the District population was significantly less than forecast.

The future population level of the Chiwaukee Prairie-Carol Beach area, like that of the overall Kenosha metropolitan area, is partially dependent on a number of external factors, including general economic conditions. Future population growth within the study area will, however, also be dependent on the physical capability of the area to accommodate additional urban development. Any significant increase in the population of the study area, given the soil limitations in the area, would require the extension of urban services and facilities, particularly public sanitary sewer service, to serve existing and new development within the area. As indicated in Chapter I, one of the primary purposes of this planning program is to identify a future urban service area within the Chiwaukee Prairie-Carol Beach area. The urban service area recommendations formulated under this planning program may thus be expected to have a significant influence on the future size and distribution of the population of this area.

Map 2

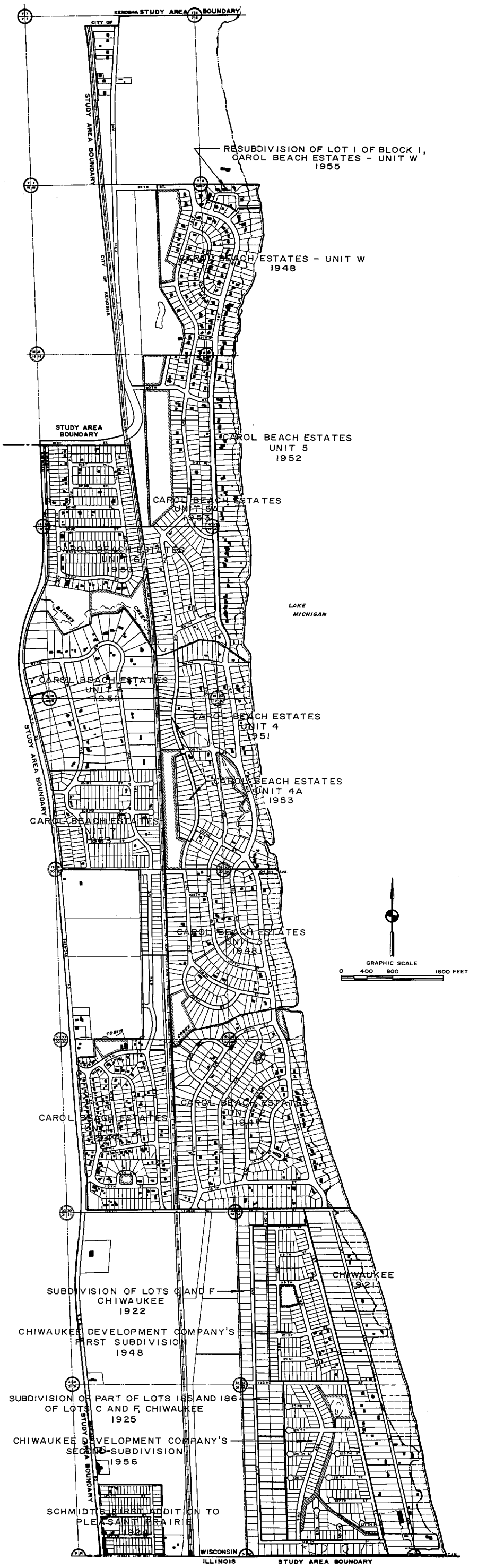
PLANNING SUBAREAS WITHIN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA



Source: SEWRPC.

Map 3

SUBDIVIDED LANDS IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA



Source: SEWRPC.

LAND USE

The Chiwaukee Prairie-Carol Beach study area contains a diversity of land uses, including certain sensitive wetland and prairie areas, many of which are essentially undisturbed by man's activities; areas which have been partially developed in residential use, where existing houses are scattered intermittently along an extensive street network; relatively highly developed areas that represent true residential neighborhoods; and remnant agricultural areas. The existing land use pattern is in large measure a result of the extensive land subdivision activity which has taken place despite the physical development limitations of the area. About 1,246 acres, or 68 percent of the total study area, have been subdivided for urban residential use. Plats for certain portions of the study area located south of 116th Street were recorded during the 1920's. Most of the platting activity within the study area, however, occurred between 1947 and 1956. A total of more than 2,700 residential lots have been platted along an extensive network of local streets within the study area (see Table 4 and Map 3).[3] While certain of the platted areas--particularly Carol Beach Estates Unit No. 1 and Carol Beach Estates-Unit W--have developed as residential neighborhoods, much of the platted land remains sparsely developed owing to the high water table and other physical development limitations in the area, and natural resource values remain intact in many such areas.

As indicated in Table 5, urban lands in combination encompass 517 acres, or 28 percent of the study area, while open lands--including wetlands, woodlands, agricultural lands, and unused lands--along with surface water encompass a total of 1,308 acres, or 72 percent of the area. Residential lands and transportation and utility lands account for most of the existing urban lands. Residential lands encompass 237 acres, or 13 percent of the study area. Residential development in the study area is located primarily between 116th Street and 85th Street (see Map 4). Concentrations of residential land occur along the Lake Michigan shoreline, as well as in Carol Beach Estates-Unit No. 1 and Carol Beach Estates-Unit W. Elsewhere, residential development is comparatively sparse and scattered in nature.

Lands devoted to transportation use and utility use in the study area in combination total 257 acres. These lands include existing local and arterial streets in the study area; the Chicago & North Western Railway right-of-way through the study area; and a small area devoted to utility use in the Wisconsin Electric Power Company property located north of 85th Street. There are about 4.8 linear miles of arterial streets--consisting of STH 32 and CTH T--encompassing about 46 acres in the study area. There are 21.4 linear miles of existing local streets in the study area, encompassing about 164 acres. Many segments of the local street network within the study area have fallen into disrepair. It should be noted that certain segments of the street network proposed in original subdivision plats--in combination totaling 6.0 linear miles and encompassing about 44 acres[4]--either were never constructed, have

[3]It should be noted that some of the lots lying along the Lake Michigan shoreline are now partially or entirely submerged as a result of Lake Michigan shoreline erosion.

[4]This acreage is not included in the transportation and utility land use category for the study area.

Table 4

RECORDED SUBDIVISIONS IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA

Subdivision Name	U. S. Public Land Survey		Year Recorded	Subdivision Area (acres)[a]	Number of Lots			
	Section	Quarter Section			Developed	Undeveloped	Significantly Eroded[b]	Total
Carol Beach Estates-Unit W.....	17 18	NW, SW, NE, SE	1948	73	90	51	6	147
Resubdivision of Lot 1 of Block 1, Carol Beach Estates-Unit W.....	17	NW	1955	6	9	5	1	15
Carol Beach Estates-Unit 5.....	17 20	SW NW	1952	34	33	19	4	56
Carol Beach Estates-Unit 5A.....	17 18 19 20	SW SE NE NW	1953	113	41	171	--	212
Carol Beach Estates-Unit 6.....	18 19	SE NE, NW	1953	95	66	190	--	256
Carol Beach Estates-Unit A.....	19	NE, NW, SE, SW	1952	102	34	48	--	82
Carol Beach Estates-Unit 4A.....	19	NE, SE	1953	18	--	40	--	40
Carol Beach Estates-Unit 4.....	19 20 30 29	NE, SE NW, SW NE NW	1951	95	37	148	11	196
Carol Beach Estates-Unit 7	19 30	SW, SE NE	1953	70	22	188	--	210
Carol Beach Estates-Unit 3.....	29 30	NW NE, SE	1948	91	28	157	25	210
Carol Beach Estates-Unit 1.....	30	NE, SE	1947	99	137	94	--	231
Carol Beach Estates-Unit 2.....	29 30	NW, SW NE, SE	1947	142	74	259	10	343
Schmidt's First Addition to Pleasant Prairie.....	31	SE	1924	24	10	104	--	114
Chiwaukee.....	32	NW, SW, SE	1921	76	42	45	31	118
Subdivision of Lots C and F, Chiwaukee.....	32	NW, SW	1922	46	3	76	--	79
Subdivision of Part of Lots 185 and 186 of Lots C and F, Chiwaukee.....	32	NW, SW	1925	37	--	71	--	71
Chiwaukee Development Company's First Subdivision.....	32	NW	1948	53	17	149	--	166
Chiwaukee Development Company's Second Subdivision.....	32	SW	1956	72	--	200	--	200
Total	--	--	--	1,246	643	2,015	88	2,746

[a] Excludes the area of the submerged portions of platted lots along the Lake Michigan shoreline.

[b] Undeveloped lots along the Lake Michigan shoreline where 50 percent or more of the original lot area is now submerged because of shoreline erosion.

Source: SEWRPC.

Table 5

EXISTING LAND USE IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA: 1983

Land Use Category	Acres	Percent
Urban Land Uses		
Residential	237	13.0
Commercial	6	0.3
Transportation and Utilities	257	14.1
Governmental and Institutional	2	0.1
Recreational[a]	15	0.8
Subtotal	517	28.3
Open Space Uses (wetlands, woodlands, agricultural, water, and unused lands)	1,308	71.7
Total	1,825	100.0

[a]Includes intensively used outdoor recreation areas.

Source: SEWRPC.

been overgrown by vegetation subsequent to construction, or, in one case, have been destroyed as a result of erosion of the Lake Michigan shoreline.

LAND OWNERSHIP

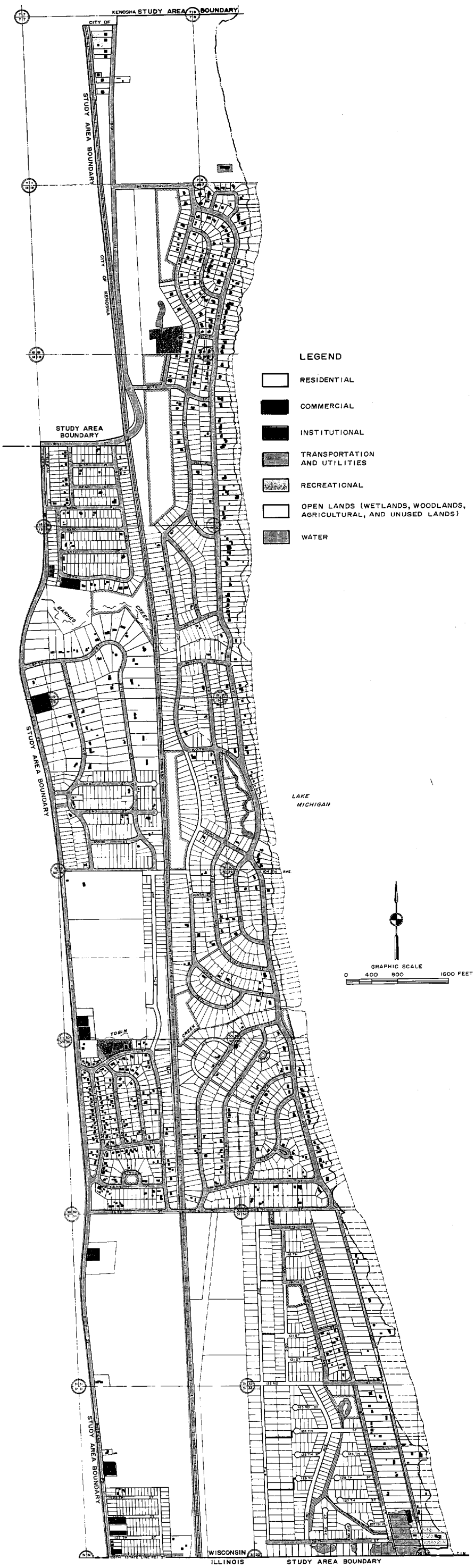
Land ownership in the study area may be classified as public, quasi-public, or private. As indicated in Table 6, in 1982 publicly held lands in the study area totaled 421 acres, or about 23 percent of the study area; quasi-public lands totaled 243 acres, or about 13 percent of the study area; and private lands totaled 1,161 acres, or about 64 percent of the study area. The existing land ownership pattern within the study area is shown on Map 5 and summarized in Table 6.

Public Lands

In 1982, publicly held lands in the study area consisted primarily of park and open space lands, tax delinquent property, and street and highway rights-of-way. The Town of Pleasant Prairie had acquired 73 acres, or 4 percent of the study area, for park and open space purposes through dedication in land subdivisions. The University of Wisconsin held title to a total of 91 acres, or 5 percent of the study area--all of these lands being located within The Nature Conservancy's Chiwaukee Prairie project area. Title to these areas was transferred to the University of Wisconsin by The Nature Conservancy under its Chiwaukee Prairie land acquisition program. Kenosha County had acquired, through forfeiture as a result of delinquent property taxes, a total of six lots totaling about 2 acres, or 0.1 percent of the study area. The Wisconsin Department of Transportation owned three lots--totaling slightly less than 1 acre, or less than 0.1 percent of the study area--located along the east side of Sheridan Road in the study area. Street and highway rights-of-way constituted 254 acres, or 14 percent of the study area--including 44 acres encompassed by rights-of-way which have been platted but never constructed or rights-of-way where streets were constructed but no longer exist.

Map 4

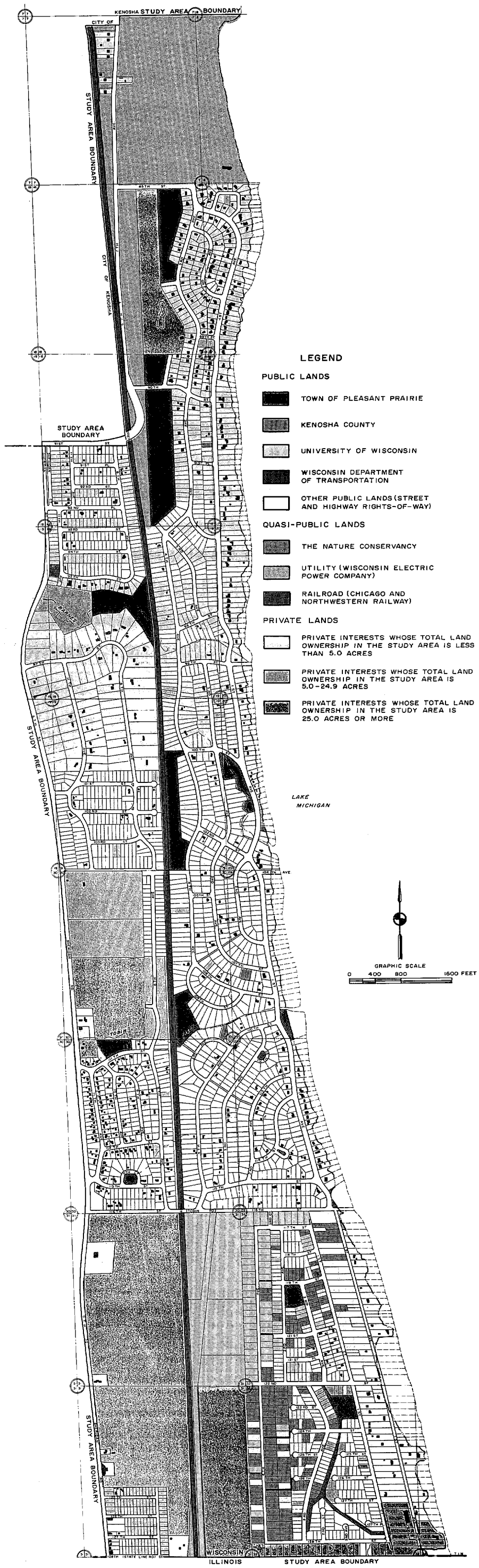
EXISTING LAND USE IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA: 1983



Source: SEWRPC.

Map 5

EXISTING LAND OWNERSHIP IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA: 1982



Source: Kenosha County Assessor's Office and SEWRPC.

Table 6

LAND OWNERSHIP WITHIN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA: 1982

Property Owner Classification		Area	
		Acres	Percent of Total
Public	Town of Pleasant Prairie	73	4.0
	Kenosha County	2	0.1
	University of Wisconsin	91	5.0
	Wisconsin Department of Transportation	1	0.1
	Other Public Lands (street and highway rights-of-way)	254	13.9
	Subtotal	421	23.1
Quasi-Public	The Nature Conservancy	52	2.9
	Utility (Wisconsin Electric Power Company)	145	7.9
	Railroad (Chicago & North Western Railway)	46	2.5
	Subtotal	243	13.3
Private	Private Interests Whose Total Land Ownership in the Study Area is Less Than 5.0 Acres	806	44.2
	Private Interests Whose Total Land Ownership in the Study Area is 5.0-24.9 Acres	88	4.8
	Private Interests Whose Total Land Ownership in the Study Area is 25.0 Acres or More	267	14.6
	Subtotal	1,161	63.6
Total		1,825	100.0

Source: Kenosha County Assessor's Office and SEWRPC.

Quasi-Public Lands

In 1982, quasi-public lands in the study area included lands owned by The Nature Conservancy in the Chiwaukee Prairie area, lands owned by the Wisconsin Electric Power Company, and the right-of-way of the Chicago & North Western Railway through the study area (see Table 6 and Map 5). The Nature Conservancy owned a total of 52 acres of land within the Chiwaukee Prairie--an area which, as previously noted, represents one of the best remaining examples of prairie in the Great Lakes area.[5] The Nature Conservancy initially transferred the ownership of such land to the University of Wisconsin. The Nature Conservancy now maintains the title to additional lands as they are acquired under its continuing Chiwaukee Prairie land acquisition program. The Chiwaukee Prairie area itself is described in more detail in a later section of this chapter.

The Wisconsin Electric Power Company owned a total of 145 acres of land in the study area, including nearly the entire portion of the study area north of 85th Street, as well as certain lands adjacent to the Chicago & North Western

[5]As a result of additional land acquisition, lands held by The Nature Conservancy in the Chiwaukee Prairie increased to about 55 acres by the end of 1983.

Railway right-of-way south of this area. The portion of the study area located north of 85th Street and east of 7th Avenue is a unique sand dune-prairie complex, known as the Kenosha Sand Dunes, which is also described in more detail in a later section of this chapter.

The Chicago & North Western Transportation Company owned a total of 46 acres of land in the study area in 1982, consisting of its railway right-of-way which traverses the study area in a north-south direction.

Private Lands

In 1982, a total of 1,659 private interests--individuals and corporations--owned real property within the study area totaling 1,161 acres, or about 64 percent of the study area. Of these, about 1,647 owned fewer than 5 acres of land each, and these landowners together accounted for a total of 806 acres, or about 44 percent of the study area (see Table 6). A total of seven private interests owned between 5 and 24 acres of land each, and together accounted for a total of 88 acres, or 5 percent of the study area. A total of five private interests owned 25 acres or more each, and together accounted for about 267 acres, or about 15 percent of the study area.

NATURAL RESOURCE BASE

The proper management of the natural resource base is essential to the provision of opportunities for outdoor recreational activities, as well as scientific and educational pursuits; to the maintenance of a healthy environment for all forms of life; and to the maintenance of an area's cultural and natural heritage and beauty. The Chiwaukee Prairie-Carol Beach area contains some of the outstanding natural resource features of the Southeastern Wisconsin Region. A description of the most important remaining features of the natural resource base is presented in this section. For analysis purposes, the various features of the natural resource base--including existing prairies, wetlands, and wildlife habitat areas--are treated on an individual, element-by-element basis below. These features are not mutually exclusive, however, and there is considerable overlap among the natural resource features described herein. For example, much of the existing prairie area in the study area consists of wetlands. Moreover, certain wetlands and prairie areas constitute important wildlife habitat. The identification of areas where concentrations of the individual features of the natural resource base exist is at the heart of the environmental corridor concept, which is described at the conclusion of this section.

Wetlands

Wetlands are defined as areas in which the water table is at or near the land surface and are characterized both by hydric soils, such as peats, mucks, or other organic soils, and by the growth of hydrophytes such as cattails, bulrushes, sedges, and willows. Wetlands in the study area perform an important set of natural functions which make them particularly valuable resources. Wetlands contribute to the maintenance of good water quality--except during unusual periods of high runoff following prolonged drought--by serving as traps which retain nutrients and sediments, thereby preventing them from reaching streams and lakes. They act to retain water during dry periods and hold it during flooding events, thus keeping the water table high and relatively stable. Wetlands are important resources for overall environmental health

and diversity. They provide essential breeding, nesting, resting, and feeding grounds and predator escape cover for many forms of fish and wildlife. The presence of water is also attractive to many upland birds and other animals. These attributes have the net effect of improving general environmental health; providing recreational, research, and educational opportunities; maintaining opportunities for hunting and fishing; and adding to the aesthetics of an area. A detailed description of the natural functions performed by wetlands in the study area is presented in Appendix A of this report.

Wetlands have severe limitations for residential, commercial, and industrial development. In general, these limitations are related to the high compressibility and instability, high water table, low bearing capacity, and high shrink-swell potential of wetland soils. In addition, the use of metal conduits in some wetland soil types is constrained because of the potential for corrosion. These limitations may result in flooding, wet basements, unstable foundations, failing pavements, and failing sewer and water lines. Moreover, there are significant and costly onsite preparation and maintenance costs associated with the development of wetland soils, particularly in connection with roads, foundations, and public utilities.

An inventory of wetlands in southeastern Wisconsin, including the Chiwaukee Prairie-Carol Beach study area, was recently completed by the Regional Planning Commission for the Wisconsin Department of Natural Resources under a statewide wetlands mapping program--officially known as the "Wisconsin Wetlands Inventory." The wetlands identified under the State Wetlands Mapping Program are shown on Map 6.[6] This map identifies three general wetland types, based upon vegetative cover: 1) wetlands typically covered by emergent plants, such as cattails, sedges, and grasses; 2) wetlands typically covered by broad-leaved deciduous shrubs; and 3) wetlands typically covered by broad-leaved deciduous trees. The wetlands identified on Map 6 encompass a total of 818 acres, representing 45 percent of the study area.

It should be noted that most of the wetlands located east of the Chicago & North Western Railway right-of-way occur in association with the beach dune ridge and swale complex which characterizes much of the study area. The swales, or low areas, between the ridges are wetlands and are covered by cattails, bulrushes, sedges, grasses, and other wetland vegetation; the ridges themselves are dry. The alternating ridges and swales in the study area are too small to be delineated individually, and much of the ridge and swale complex has been identified as wetland under the Wisconsin Wetland Inventory owing to the predominance of wetland vegetation.

Several fen areas have been identified within the Chiwaukee Prairie-Carol Beach area. Fens are a very rare type of wetland which is dominated by sedges and grasses growing on sandy peat soils and which generally develop in groundwater discharge areas. Areas within which fen plant communities have been identified are shown on Map 7. These areas encompass 62 acres, or about 3 percent of the study area.

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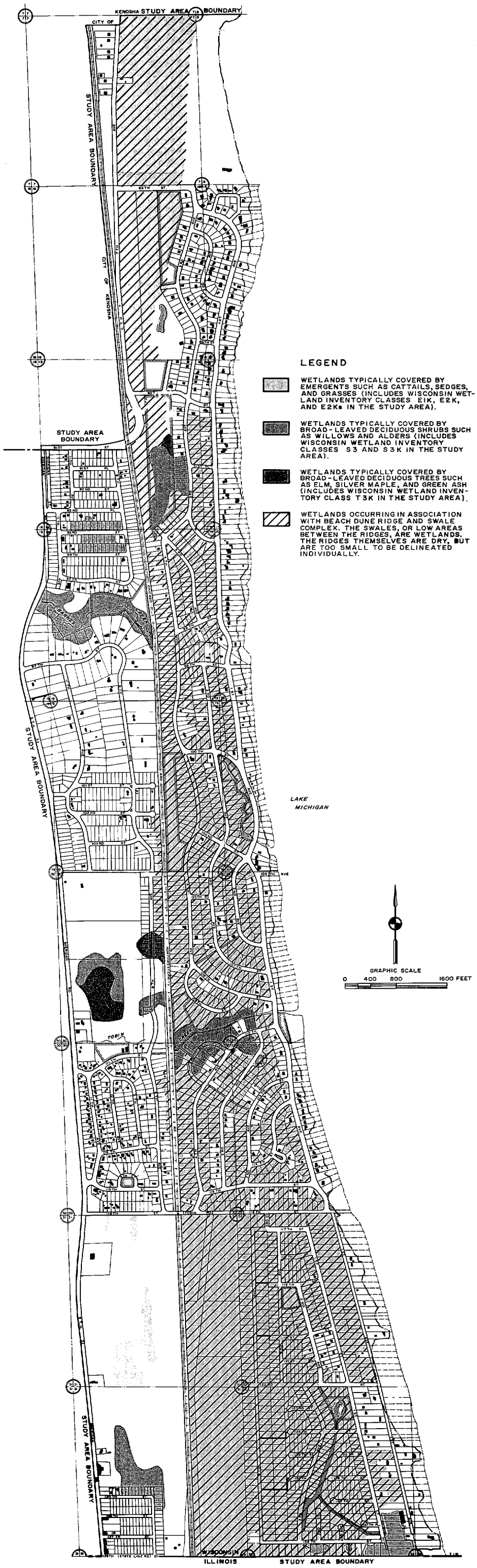
[6]The State Wetlands Mapping Program used as a primary data source aerial photography dated June 1979. Map 6 reflects wetland losses known to have occurred between June 1979 and April 1980.

Map 6

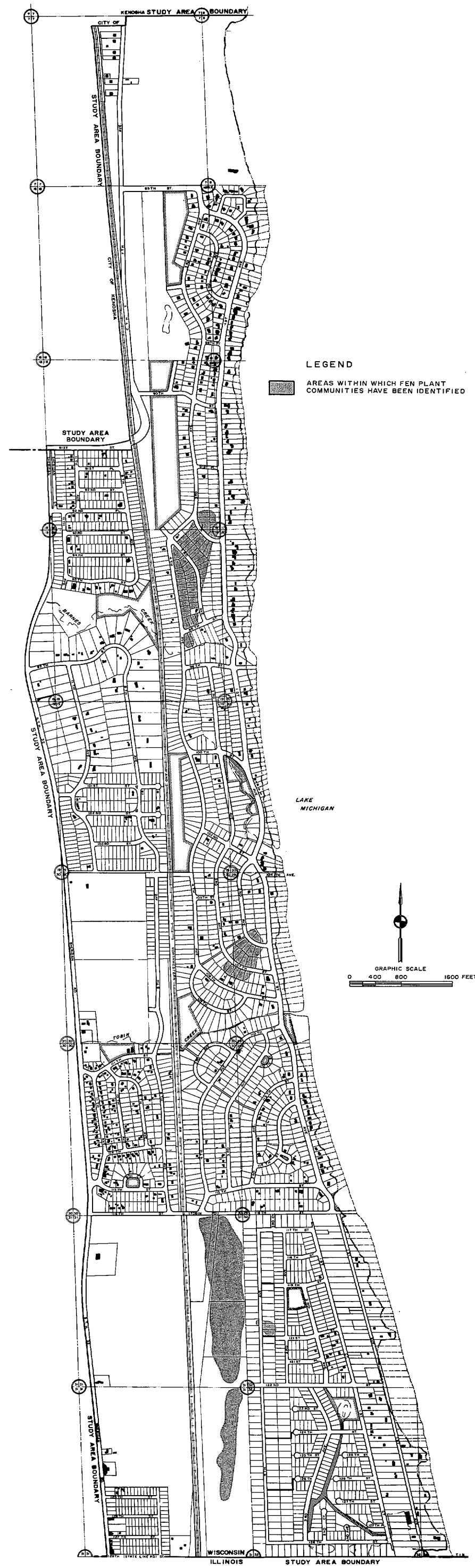
WETLANDS IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA: 1980



Source: Wisconsin Department of Natural Resources and SEWRPC.

Map 7

KNOWN FEN PLANT COMMUNITIES IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA: 1982



Source: SEWRPC.

Prairies

Prairies are open, or generally treeless, areas in the landscape which are dominated by native grasses. Such areas have important ecological and scientific values and consist of four basic types: low or wet prairie, mesic or moderately moist prairie, dry prairie, and oak openings. Inventories conducted by the Regional Planning Commission indicate that prairies cover a significant portion of the study area--860 acres, or 47 percent (see Map 8). The identified prairies range from wet to dry prairies.

Wet prairies in the study area tend to occur in the swales and are dominated by cord, bluejoint, big bluestem, and muhly grasses. In addition, they contain such forbs as New England aster, gayfeather, prairie dock, Culver's root, and golden alexander. Mesic prairies tend to occur on the dune slopes. These prairies are dominated by Indian grass, switch grass, and big bluestem grass. Typical mesic prairie forbs include, among others, smooth blue aster, wild indigo, rattlesnake master, New Jersey tea, and compass plant. Dry prairies occur on the well-drained dune ridges. The dominant grasses include prairie dropseed, little bluestem, panic grass, and needle grass. Forbs characteristic of dry prairies in the study area include bergamot, bush clover, orange paccoon, lead plant, stiff goldenrod, and purple prairie clover. Oak openings are savannas dominated by the dry prairie grasses with up to 17 oak trees per acre, and having less than a 50 percent canopy cover. The characteristic forbs in the oak openings are also the dry prairie species. The oak openings within the Chiwaukee Prairie-Carol Beach area are generally located on the higher, well-drained dunes. Most of the oak opening areas within the study area have been developed.

An additional prairie-like habitat within the study area is the unstable beach dune community. Unstable beach dunes are recently deposited lacustrine sands that are characterized by such pioneer grasses and forbs as dune reed, wild rye grass, beach grass, wormwood, silverweed, and sea rocket. The best example of this unstable beach dune community is located in the Kenosha Sand Dunes natural area. However, there are also good examples of unstable beach dunes along the undeveloped portions of the Chiwaukee Prairie-Carol Beach shoreline. This unstable beach dune community occurs nowhere else along the Lake Michigan shoreline in southeastern Wisconsin.

Prairies within the study area have been evaluated by the Regional Planning Commission based on a consideration of the diversity of native prairie plants present, the integrity of the plant community, and the extent of human disturbance. Based on this evaluation, prairie areas were assigned values of high, medium, and low quality (see Map 8).

High-value prairies show a rich diversity of native prairie plants, and exhibit a plant community structure and integrity representative of the presettlement landscape. These areas have not been significantly disturbed by, or have essentially recovered from, man's activities. The high-value prairie areas are of the quality expected to occur within a designated state scientific area and natural areas of statewide or greater significance.

Medium-value prairies show a good diversity of native prairie plants and exhibit a structure and integrity that is less than ecologically ideal. These areas have evidence of past or present human disturbance.

Low-value prairies retain a moderate amount of natural cover. Usually, these areas have been greatly disturbed in the past, but because of the large native seed source available, have begun to recover quite nicely.

It should be noted that both the medium- and low-value prairie areas, if left undisturbed, may be expected to increase in their native diversity and improve in their plant community structure and integrity with time.

About 368 acres, or 20.2 percent of the area, has been identified as high-value prairie. The most significant prairie area is the Chiwaukee Prairie located in the study area south of 116th Street. The Chiwaukee Prairie is recognized as one of the best remaining examples of wet to wet-mesic prairie in the Great Lakes region. Another large tract of high-value prairie--the western portion of the Kenosha Sand Dunes--is located in the study area north of 85th Street. Other notable high-value prairie areas include an area located east of 4th Avenue, north of 96th Street, within a sparsely developed portion of a residential subdivision--Carol Beach Estates-Unit 5A; and an area located west of 8th Avenue, south of 91st Street, within a partially developed residential subdivision--Carol Beach Estates-Unit 6.

Medium-value prairie areas cover about 343 acres, or 18.8 percent of the study area, while low-value prairie areas cover about 149 acres, or 8.2 percent of the study area. As shown on Map 8, these medium- and low-value prairie areas lie primarily between 116th Street and 85th Street. Prairie vegetation remains intact throughout much of this area despite the installation of a local street system and the partial development of the area in the form of scattered single-family housing units.

Surface Waters and Floodplains

Surface water resources--consisting primarily of Lake Michigan but also of several minor streams tributary to Lake Michigan, narrow drainageways, and small ponds--form an important element of the natural resource base of the study area. The Lake Michigan shoreline along the eastern edge of the study area measures approximately 4.9 miles in length. The total length of major streams within the study area is about 3.3 miles. In addition, surface waters of the small ponds within the study area and of the Trident Marina basin within the study area in combination encompass about 10 acres, or less than 1 percent of the study area.

For planning and regulatory purposes, floodplains are normally defined as the areas subject to inundation by the 100-year recurrence interval flood event. This is the event that would be reached or exceeded in severity on the average of once every 100 years. Stated another way, there is a 1 percent chance that this event will be reached or exceeded in severity in any given year. Floodplain areas are generally not well suited to urban development, not only because of the flood hazard, but because of high water tables and the presence of soils poorly suited to urban use. The floodplain areas, however, generally contain important elements of the natural resource base such as high-value wetlands and wildlife habitat.

Flood hazard areas in the Chiwaukee Prairie-Carol Beach study area have been delineated by the Regional Planning Commission on large-scale, 1 inch equals 200 feet scale topographic maps. Floodplains identified along Barnes Creek

and other streams tributary to Lake Michigan are shown on Map 9. Also shown on this map is a narrow band along the Lake Michigan shoreline which is subject to inundation by Lake Michigan on the average of once every 100 years. This band includes those lands lying below an elevation of 583.9 feet National Geodetic Vertical Datum (Mean Sea Level Datum), but does not include lands above this elevation subject to storm wave runup which could occur during the 100-year event. In combination, the flood hazard areas shown on Map 9 total 58 acres, or about 3 percent of the total study area.

Wildlife Habitat

Terrestrial Wildlife Habitat: Many of the wetland and prairie areas described above constitute significant wildlife habitat areas. A total of 203 game and nongame species--including seven species of amphibians, 14 species of reptiles, 150 species of birds, and 32 species of mammals--are known or likely to exist within the Chiwaukee Prairie-Carol Beach study area. Of these 203 species, one is identified as endangered in Wisconsin, and two are identified as threatened in Wisconsin. Moreover, 18 species are included on the Wisconsin watch list. The wildlife species in the study area are identified in Appendix B of this report.

A total of 702 acres of wildlife habitat have been identified within the study area and value rated as shown on Map 10.[7] High-value wildlife habitat areas encompass 320 acres, or about 18 percent of the study area. The identified high-value wildlife habitat is the Chiwaukee Prairie area situated east of the Chicago & North Western Railway right-of-way in the southernmost part of the study area. This area constitutes important songbird habitat. Medium-value wildlife habitat areas encompass 382 acres, or about 21 percent of the study area, and are located in the study area between 80th Street and 110th Street. No low-value wildlife habitat areas have been identified in the study area. Of the total identified wildlife habitat area, 611 acres, or about 87 percent, consist of wetlands; 87 acres, or about 12 percent, consist of upland open space lands; and 4 acres, or slightly less than 1 percent, consist of surface water.

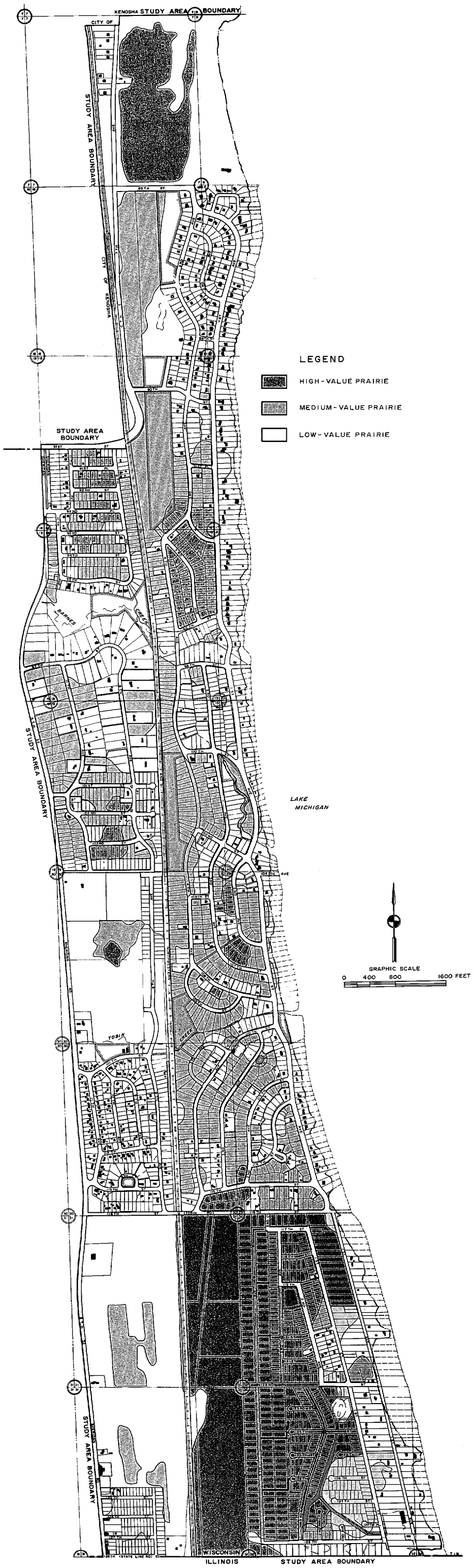
Because of its location along the Mississippi flyway, the study area provides important habitat for the interstate and international migration of birds. As such, the study area contributes to the populations and, thus, the gene pools of wildlife habitat areas throughout the flyway.

Fishery: The Wisconsin Department of Natural Resources conducted a fishery inventory of Barnes Creek and Tobin Creek in 1975 and 1983. These surveys indicated that Barnes Creek and Tobin Creek support a diverse and balanced

[7]High-value habitat areas contain a good diversity of wildlife, are adequate in size to meet all of the habitat requirements of the species concerned, and are generally located in proximity to other wildlife habitat areas. Medium-value wildlife habitat areas generally lack one of the three criteria for a high-value wildlife habitat area. However, they do retain a good plant and animal diversity. Low-value habitat areas are remnant in nature in that they generally lack two or more of the three criteria for a high-value wildlife habitat, but may, nevertheless, be important if located in proximity to other high- or medium-value wildlife habitat areas, if they provide corridors linking higher value wildlife habitat areas, of if they provide the only available range in the area.

Map 8

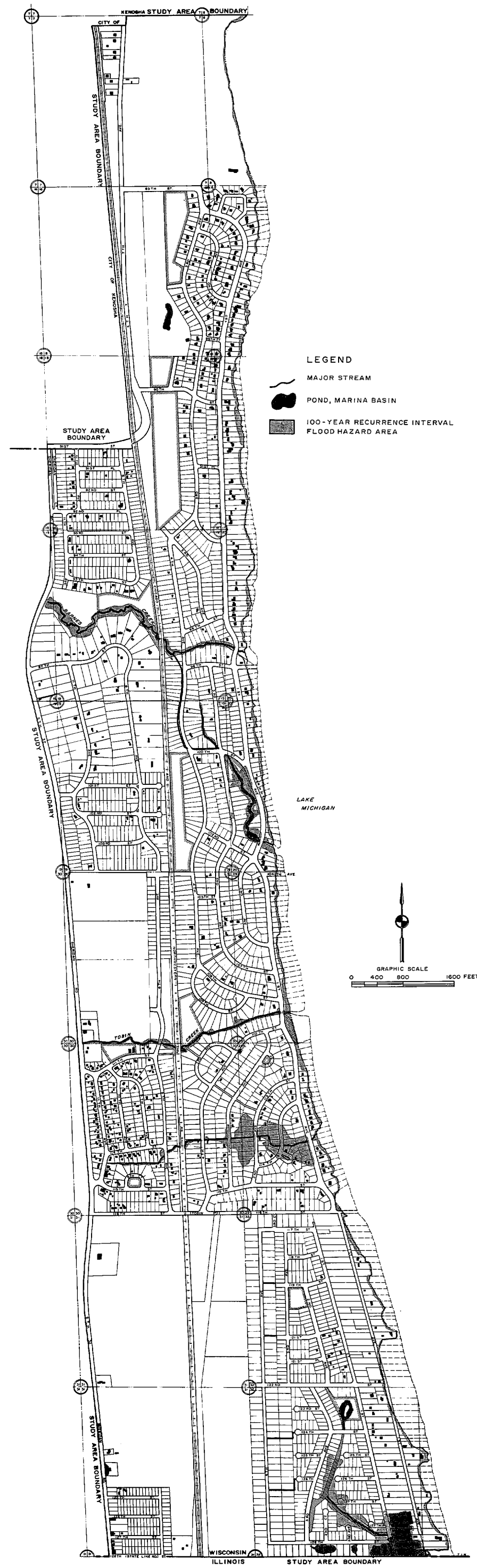
PRAIRIES IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA: 1980



Source: SEWRPC.

Map 9

SURFACE WATER RESOURCES AND FLOODLANDS IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA



Source: SEWRPC.

population of forage minnows and other fish species. Small largemouth bass were found in Barnes Creek.[8] Barnes Creek is also a known spawning stream for rainbow smelt. While northern pike are not common in this part of Lake Michigan, the wetlands adjacent to Barnes Creek and Tobin Creek contain suitable northern pike spawning habitat. Moreover, they are accessible to northern pike when they come up from the lake to spawn during periods of high water in spring.

Critical Plant Habitat Areas

A total of 18 of Wisconsin's rare, threatened, and endangered plant species are known to exist within the Chiwaukee Prairie-Carol Beach area.[9] Map 11 identifies areas within which the occurrence of these species has been documented and which, based upon field inspection during the summer of 1982, have been determined to be suitable for the long-term maintenance of these species. These "critical plant habitat" areas encompass 608 acres, or about 33 percent of the study area. Of the total identified critical plant habitat areas, 540 acres, or about 89 percent, consist of wetlands, and 68 acres, or about 11 percent, consist of upland open space land. The maintenance of these areas is important to the long-term survival of these species. Minimum area requirements for the successful reproduction of many of these plants are unknown, and thus it is necessary to maintain as large a tract as possible. In addition, the preservation of several populations of a particular species is important if its genetic diversity is to be maintained. This genetic diversity is also important to the long-term viability of a species. Also, the maintenance of several populations provides a buffer against any disease which may eliminate or impair the reproductive capacity of a particular species.

The rare species which exist in the study area are on watch status in Wisconsin because of their rarity of occurrence and/or declining population. Continued loss of their habitat would likely result in their official listing as a threatened or endangered species.

Natural Areas

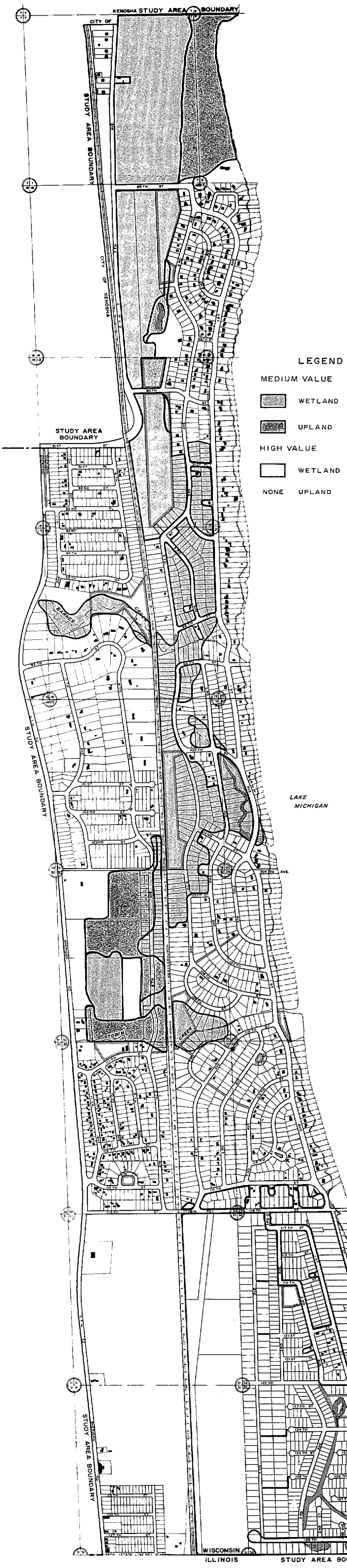
Natural areas are defined by the Wisconsin Scientific Areas Preservation Council as tracts of land and water so little modified by human activities or sufficiently recovered that they contain native plant and animal communities believed to be representative of the presettlement landscape. The Scientific Areas Preservation Council has identified seven natural areas in the Chiwaukee Prairie-Carol Beach study area (see Map 12). Four of these areas--the Chiwaukee Prairie, the Kenosha Sand Dunes, the Carol Beach Low Prairie and Panne', and the Tobin Road Prairie--have been identified as natural areas of statewide or greater significance. The remaining three areas--the Carol Beach Prairie, the Barnes Creek Dunes and Panne', and the Carol Beach Estates Prairie--have been identified as natural areas of countywide or regional significance. In combination, the identified natural areas encompass 493 acres,

[8]A detailed description of the findings of the Department of Natural Resources fish surveys is presented in Appendix A of this report.

[9]A list of Wisconsin rare, threatened, and endangered plant species known to occur within the Chiwaukee Prairie-Carol Beach area is presented in Appendix A of this report.

Map 10

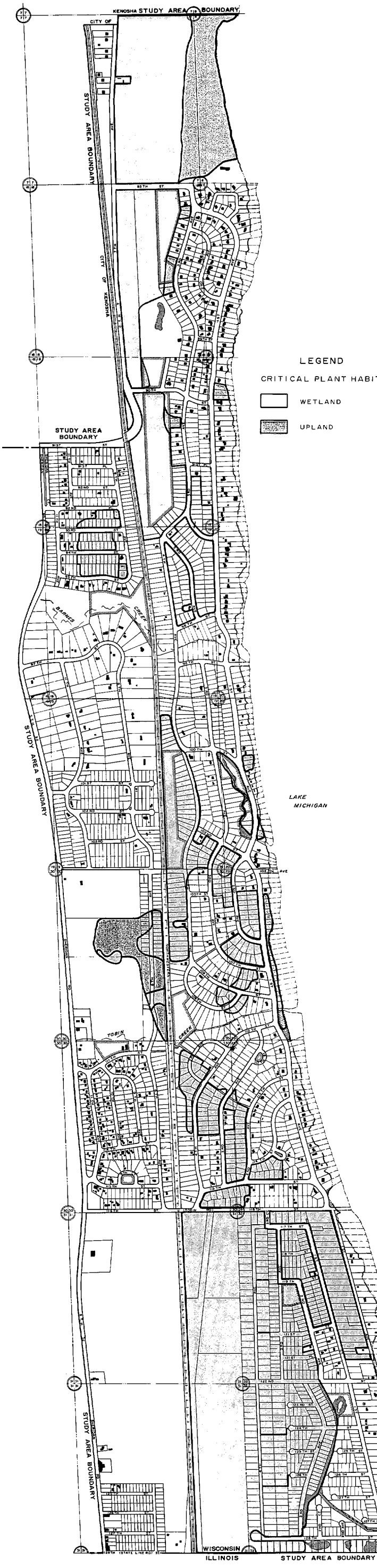
WILDLIFE HABITAT AREAS IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA: 1983



Source: Wisconsin Department of Natural Resources and SEWRPC.

Map 11

CRITICAL PLANT HABITAT AREAS IN THE PRAIRIE-CAROL BEACH STUDY AREA



Source: SEWRPC.

or 27 percent of the study area. Of the total identified natural areas, 418 acres, or about 85 percent, consist of wetlands; 56 acres, or about 11 percent, consist of upland open space; 2 acres, or less than 1 percent, consist of surface water; and 17 acres, or about 3 percent, consist of existing streets and a portion of the Chicago & North Western Railway right-of-way. A description of the seven natural areas is presented in Table 7.

In addition to maintaining an inventory of natural areas, the Scientific Areas Preservation Council maintains an official state list of "scientific" areas available for research and the teaching of conservation and natural history. Such areas represent the best remaining natural areas and contain nearly intact plant and animal communities, or important geological or archaeological features. Furthermore, scientific areas serve as benchmark areas to which the impacts of human activities can be compared and measured. The Scientific Areas Preservation Council has designated one state scientific area in the study area, this being a portion of the Chiwaukee Prairie natural area adjacent to the Chicago & North Western Railway right-of-way (see Map 12). The boundaries of this area may be expected to be modified and the officially designated scientific area enlarged as planned land acquisition by The Nature Conservancy proceeds within the area.

Archaeological Sites

According to the files of the State Historical Society of Wisconsin, a total of nine archaeological sites, consisting primarily of early American Indian campsites and villages, have been identified in the study area. The most significant archaeological site identified to date is the Barnes Creek site, located near Barnes Creek in Section 19 of U. S. Public Land Survey Township 1 North, Range 23 East, which has been listed in the National Register of Historic Places. The site contains important information concerning the history and settlement patterns of the Woodland Culture peoples (circa 200 B.C.-1200 A.D.) and earlier groups. Excavations at the site have been conducted by the University of Wisconsin-Parkside and the local archaeological society.

The State Historical Society has expressed a belief that the archaeological sites in the study area are significant. With the exception of the Barnes Creek sites, however, the archaeological sites in the study area have not yet been closely studied by archaeologists. Many of these sites were reported before 1925 and have not been examined since. Existing site boundaries are, for the most part, highly generalized.

Environmental Corridors

Environmental Corridor Concept: Previous sections of this chapter have described the most important elements of the natural resource base in the Chiwaukee Prairie-Carol Beach study area. One of the most important tasks completed under the regional planning effort in southeastern Wisconsin has been the identification and delineation of those areas in which concentrations of natural resource elements occur. The process developed by the Regional Planning Commission for this purpose involves a mapping overlay technique through which areas containing concentrations of natural resource elements and natural resource-related elements are identified. The following natural resource elements are considered in this mapping process: lakes, rivers, and streams and their associated shorelands and floodlands; wetlands; woodlands;

prairies; wildlife habitat areas; wet, poorly drained, and organic soils; and rugged terrain and high relief topography. The Natural resource-related elements considered in this mapping process are the following: existing park and open space sites; potential park and open space sites; historic sites; significant scenic areas and vistas; and natural and scientific areas.

The delineation of these 12 natural resource and resource-related elements on a map results in an essentially linear pattern of relatively narrow, elongated areas within the Region which have been termed "environmental corridors" by the Commission. Primary environmental corridors include a wide variety of the above-mentioned important resource and resource-related elements and are, by definition, at least 400 acres in size, two miles in length, and 200 feet in width. Secondary environmental corridors connect with primary environmental corridors and are at least 100 acres in size and one mile in length.

It should be noted that while environmental corridors consist primarily of undeveloped open space lands having significant natural resource or natural resource-related features, small areas of urban development may, under certain circumstances, be included in the environmental corridor configuration. In this regard, small enclaves of existing residential development less than five acres in size surrounded by environmentally significant open space lands are included in the primary environmental corridor under the environmental corridor mapping process. Moreover, the primary environmental corridor encompasses, at a minimum, the lands--including developed lands--within 75 feet of the shoreline of major rivers and inland lakes. Along the Lake Michigan shoreline, because of the generally wider beach and bluff areas and other natural resource features associated with the shoreline, the environmental corridor encompasses, at a minimum, the width of the beach and an area 200 feet inland from the inland edge of the beach.

In any discussion of environmental corridors and important natural resource features it is important to point out that, because of the many interacting relationships between living organisms and their environment, the destruction or deterioration of a single important element of the total environment may lead to a chain reaction of deterioration and destruction. The drainage of wetlands, for example, may have far-reaching effects, since such drainage may destroy wildlife habitat, groundwater recharge areas, and natural filtration and floodwater storage areas of interconnecting stream systems. The resulting deterioration of surface water quality may, in turn, lead to a deterioration of the quality of groundwater resources. Similarly, the destruction of woodland cover may result in soil erosion, stream siltation, more rapid runoff, and increased flooding, as well as the destruction of wildlife habitat. Although the effects of any one of the environmental changes may not in and of itself be overwhelming, the combined effects may eventually lead to a serious deterioration of the underlying and supporting natural resource base and of the overall quality of the environment. The need to maintain the integrity of the remaining environmental corridors, to the maximum extent practicable, should thus be apparent.

Primary Environmental Corridors Within the Study Area: Primary environmental corridors typically encompass a relatively small portion of the total area of a community or group of communities. For example, within the Kenosha Planning District, primary environmental corridors encompass a total area of about

Table 7

SCIENTIFIC AND NATURAL AREAS IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA

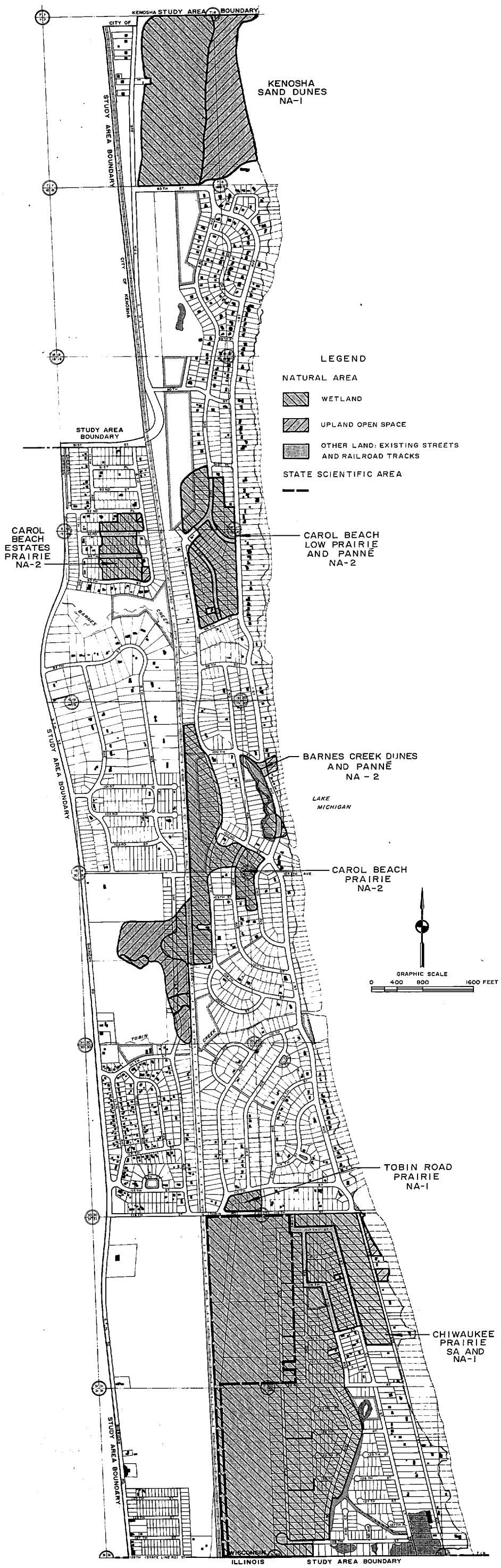
Name	Location	Owner	Acreage	Classification Code[a]	Description
Chiwaukee Prairie	T1N, R23E, Sections 31 and 32	The Nature Conservancy, University of Wisconsin, Town of Pleasant Prairie, and Private	271	SA and NA-1	Rich prairie and marsh on swell and swale topography created when the level of glacial Lake Michigan was lowered in stages. Over 350 plant species have been documented in the prairie, some of which are very rare in the State. Scattered oaks in portions give a savanna aspect to the tract. A National Natural Landmark and one of the most important prairies in Wisconsin. Critical plant species present. The boundaries of the identified NA-1 area are identical to the presently defined project boundary of The Nature Conservancy. The officially designated state scientific area represents a portion of this area adjacent to the Chicago & North Western Railway right-of-way (see Map 12)
Kenosha Sand Dunes	T1N, R23E, Sections 7 and 8	Wisconsin Electric Power Company	94	NA-1	One-half mile of frontage on Lake Michigan containing well-developed dunes and dune succession patterns (fore dunes to swale to wet prairie). The diversity of beach plant species is good. Some ditching has been done behind the dune area, but it remains in good condition and is an excellent observation area for migrating shore birds. An ancient hardwood forest bed was discovered in this area in the early 1960's as wave erosion exposed sections of the shoreline. The Lake Michigan shore has now been rip-rapped
Carol Beach Low Prairie and Panne'	T1N, R23E, Sections 17, 18, 19, and 20	Town of Pleasant Prairie and Private	35	NA-1	A rich low prairie and calcareous fen on a dune and swale topography. Critical plant species present
Carol Beach Estates Prairie	T1N, R23E, Sections 18 and 19	Private	14	NA-2	A rich wet to mesic prairie with some shrub invasion on sandy soils. Critical plant species present
Carol Beach Prairie	T1N, R23E, Sections 19, 20, 29, and 30	Town of Pleasant Prairie and Private	66	NA-2	A rich complex of low to dry prairie with fresh (wet) meadow, sedge meadow, shrub carr, and shallow marsh communities on a dune and swale topography. Critical plant species present
Barnes Creek Dunes and Panne'	T1N, R23E, Section 20	Town of Pleasant Prairie and Private	9	NA-2	An unusual mixture of dry prairie and calcareous fen plant species on a dune and swale topography adjacent to Barnes Creek. Critical plant species present
Tobin Road Prairie	T1N, R23E Section 30	Private	4	NA-1	A portion of the northern Chiwaukee Prairie area containing a rich low prairie on a dune and swale topography. Critical plant species present

[a]NA-1 indicates a natural area of statewide or greater significance. NA-2 indicates a natural area of county or regional significance. SA indicates a state scientific area.

Source: Wisconsin Department of Natural Resources and SEWRPC.

Map 12

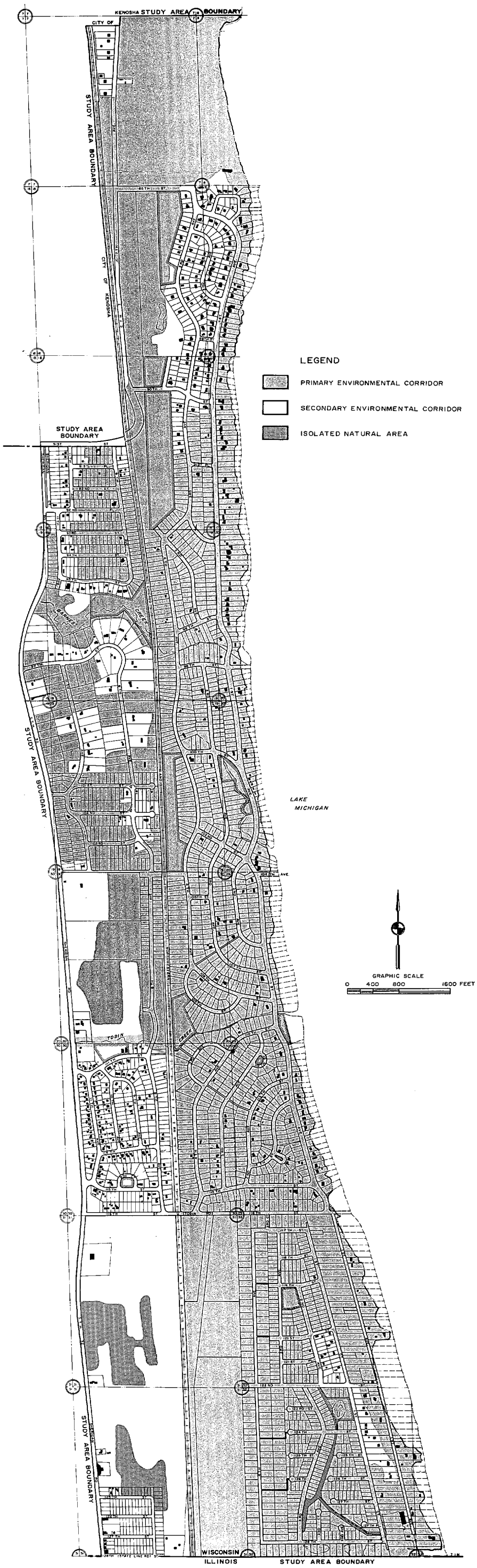
NATURAL AND SCIENTIFIC AREAS IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA: 1983



Source: Wisconsin Department of Natural Resources and SEWRPC.

Map 13

ENVIRONMENTAL CORRIDORS AND ISOLATED NATURAL AREAS IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA: 1980



Source: SEWRPC.

5,700 acres, or about 10 percent of the total area of the District. Within the Pleasant Prairie-Carol Beach study area, however, a comparatively large portion--69 percent, or about 1,264 acres of the 1,825-acre study area--has been identified as primary environmental corridor owing to the concentration of natural resource features in the area, particularly prairie areas, wetlands, and wildlife habitat areas. The identified primary environmental corridor extends the full length of the study area east of the Chicago & North Western Railway right-of-way, excluding only the intensively developed residential areas (see Map 13). The identified environmental corridor also includes a significant portion of the study area west of the Chicago & North Western Railway, although the environmental corridor is somewhat more fragmented by existing residential development west of the railway.

Secondary Environmental Corridors Within the Study Area: The only secondary environmental corridor in the Chiwaukee Prairie-Carol Beach area is a narrow band along the stream channel located just north of 111th Street. This area encompasses about four acres, or less than 1 percent of the total study area.

Isolated Natural Areas Within the Study Area: In addition to the primary and secondary environmental corridors, two isolated natural areas have been identified within the Chiwaukee Prairie-Carol Beach area. Isolated natural areas are areas of at least five acres in size which possess the natural resource features found within environmental corridors but which are isolated from environmental corridors by urban development or agricultural land. The isolated natural areas in the Chiwaukee Prairie-Carol Beach area are located east of Sheridan Road, south of 116th Street. These areas encompass about 34 acres, or about 2 percent of the total study area.

SHORELINE EROSION

Shoreline erosion is a major problem for portions of the Lake Michigan shoreline in the Chiwaukee Prairie-Carol Beach study area and the balance of the Southeastern Wisconsin Region. The shore erosion study conducted under the Wisconsin coastal management program designated the Lake Michigan shoreline along the study area as the most critical reach of the entire Lake Michigan coast in Wisconsin in terms of shore damage and recession rates.[10] This section provides information on shoreline erosion processes, existing features of the Lake Michigan shoreline along the study area, and historic trends in recession of the Lake Michigan shoreline along the study area.

Beach Erosion and Accretion Processes

A beach is an area consisting of unconsolidated materials which extends landward from the ordinary low water line to the place where there is a distinct change in physiographic form or to the line marking the start of permanent terrestrial vegetation.[11] Figure 1 illustrates the various features of

[10] D. M. Mickelson, et. al., Shore Erosion Study: Technical Report--Shoreline Erosion and Bluff Stability Along Lake Michigan and Lake Superior Shorelines of Wisconsin, 1977.

[11] U. S. Army Coastal Engineering Research Center, Shore Protection Manual, Vols. I, II, and III, 1977

a beach, including the relatively steep beach face or foreshore; the backshore on the landward side of the beach face, consisting of one or more relatively level berms; and the lake bottom immediately lakeward of the beach face exhibiting a slope of less than that of the beach face.

The features of a beach and the materials composing the beach are continuously in a state of flux as a result of the on-shore and off-shore transport of sand and gravel primarily in response to wave action. There is a constantly changing interplay between the forces that bring sand ashore and those that move it lakeward, with the position and configuration of the main mass of sand at any time serving as an index of the dominant forces. High, steep waves typical of storm events within the coastal area of southeastern Wisconsin tend to tear beaches down by removing material from them and transporting it in a lakeward direction. In contrast, the small waves characteristic of periods between storm events tend to build beaches up through a net landward transport of sediment. Thus, the beaches exhibit a continuous cyclic pattern of erosion and accretion in response to the nature of the waves impinging on the beach.[12]

Sediment is also transported parallel to the shoreline by longshore currents. Longshore currents are currents in the breaker zone running generally parallel to the shoreline and usually caused by waves breaking at an angle to the shoreline. Longshore currents transport sediment and other particulate matter--which is suspended in the current or bounced and rolled along the lake bottom--parallel to the shore. While the longshore currents within the coastal zone of southeastern Wisconsin may move in either a northerly or southerly direction in response to the direction of the incident waves, the net sediment transport is to the south. Evidence of this fact is the tendency for beaches to exhibit accretion on the north side of groins, piers, and other structures while erosion occurs on the southerly side of such structures.[13] Accretion of the extensive sand beach north of the northern breakwater of the City of Kenosha is a prime example of the effect of the net southerly transport of sediment associated with longshore currents.

The natural sloping beach face and adjacent beach dunes serve to absorb the energy of waves impinging on the coast. Structures such as groins can sometimes be used to develop beaches where they would otherwise be absent (see Figure 2), thereby protecting the adjacent shoreline development from wave attack. A problem with such structures is that they tend to block the supply of sediment downdrift of the structure, frequently resulting in a narrowing or elimination of the beach and potentially exposing the dunes in the downdrift region to wave attack.

Existing Shoreline Features[14]

Beaches in the study area generally consist of fine- to coarse-grained sand and gravel and in some places are covered with artificial fill. The width of the beach in the study area varies considerably, generally ranging from 0 to

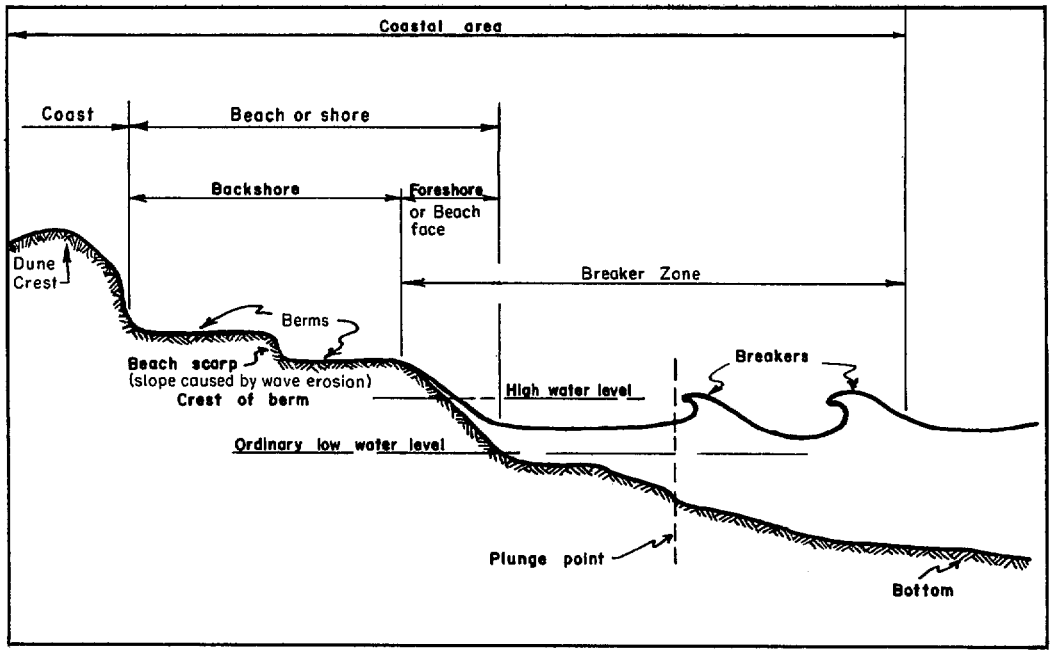
[12]SEWRPC, Lake Michigan Estuary and Direct Drainage Area Subwatersheds Planning Program Prospectus, 1978.

[13]Ibid.

[14]Michelson, op. cit.

Figure 1

TYPICAL BEACH PROFILE



Source: U. S. Army Corps of Engineers.

Figure 2

A PORTION OF SECTION 17 OF U. S. PUBLIC LAND SURVEY SECTION T1N, R23E, SHOWING THE EFFECTS OF GROINS ALONG THE LAKE MICHIGAN SHORELINE IN SOUTHEASTERN WISCONSIN

Source: SEWRPC.

110 feet, with the variation being largely attributable to shore protection structures. Along many reaches, the rise from the lake level to upland surfaces is a gradually sloping beach and there is no bluff per se. Along other reaches there is a very low bluff, generally ranging in height from 5 to 10 feet.

Many shore protection structures, including groins and shoreline revetment, have been installed along the Lake Michigan shoreline in the study area. The most extensive shore protection effort is the rip-rap revetment which has been installed along the Wisconsin Electric Power Company property in the northern portion of the study area. Along many other reaches, numerous individual shore protection structures of varying type and quality have been installed. An inventory conducted under the shore erosion study in 1976 identified a total of 175 protection structures in the study area.

Shoreline Recession Rates

Average annual Lake Michigan shoreline recession rates for the Chiwaukee Prairie-Carol Beach study area are shown on Map 14. Recent recession rates for the period 1970 to 1980 and long-term recession rates for the period 1835 to 1980 have been calculated. Shoreline recession was measured along east-west section and quarter-section lines at 19 points in the study area.

As shown on Map 14, long-term recession rates over the period 1835 to 1980 ranged between 1.5 feet per year and 8.8 feet per year at the 19 measurement sites. For 13 of the 19 sites, the annual average recession rate was 5.0 feet or greater.

As further shown on Map 14, recession rates for the period 1970 to 1980 are generally lower than the 1835-1980 rates. Shoreline accretion was observed at six measurement sites. Such accretion may be due to artificial filling or to structural shore protection which extends the shoreline.

Three major factors have been identified as contributing to the excessive shoreline recession occurring in the study area:[15]

1. High lake levels in the recent past: The low to moderate sloping beaches within the study area may be entirely submerged by only one- to two-foot increases in the lake level, causing storm-wave energy to be directed against the dunes and toe of the bluff rather than being absorbed by the beach.

2. Character of the dunes: The sand dunes, because of their unconsolidated consistency, are readily eroded by wave action, particularly during storms.

3. The City of Kenosha harbor structures: These structures interrupt the natural longshore transport of sand along the beach. Therefore, sand lost in the study area because of storm-wave action is not replenished by a sufficient inflow of sand from the north.

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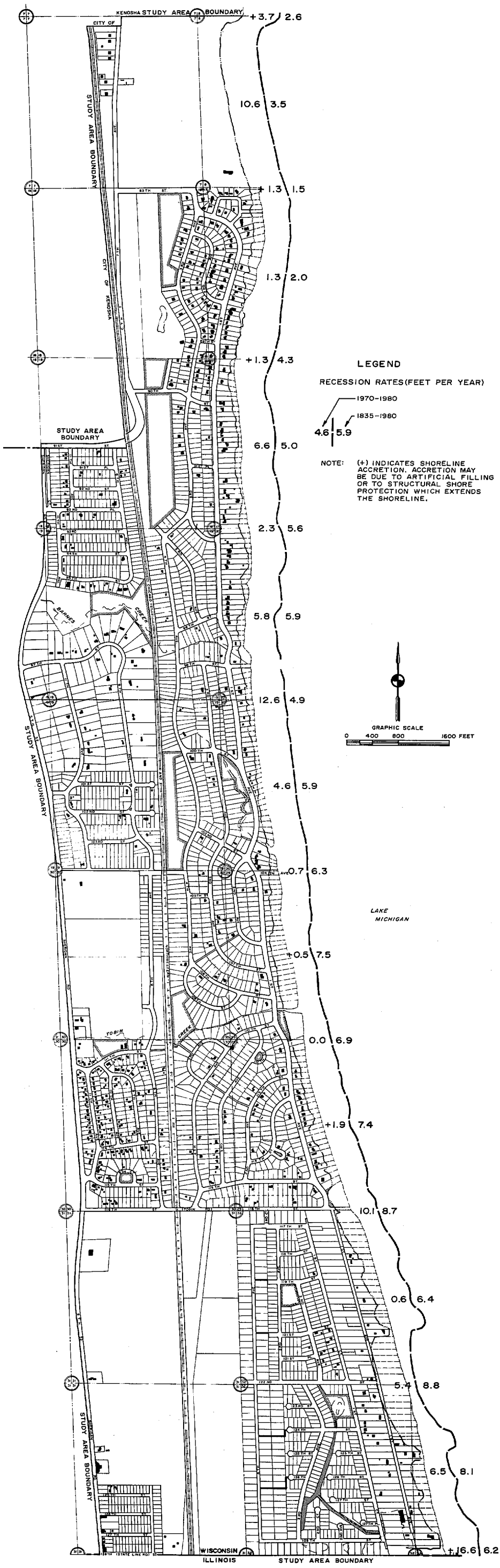
[15]Michelson, op, cit.

RECESSION OF THE LAKE MICHIGAN SHORELINE ALONG THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA



Source: SEWRPC.

It is important to note that phenomena which contribute to shoreline erosion, including high lake levels and wave and wind action, while commonly considered to be the cause of environmental and developmental problems along the Lake Michigan shoreline, are, and always will be, natural phenomena active in the coastal system. Problems associated with shoreline recession developed only when homes, commercial and industrial buildings, and other structures were constructed along the shoreline without proper recognition of the natural erosion process. The result has been actual and potential destruction and damage to such structures. This situation may be expected to continue to occur, and even increase, if shoreline recession within the Chiwaukee Prairie-Carol Beach study area is not taken into account as development proceeds.

SOIL SUITABILITY

In any land use planning program, it is necessary to examine not only how land and soils are presently used, but how they can best be used and managed. This requires a detailed soil survey which maps the geographic location of various kinds of soils; identifies their physical, chemical, and biological properties; and interprets these properties for land use and public facilities planning. Such a soil survey of the entire Southeastern Wisconsin Region was completed in 1965 by the U. S. Department of Agriculture, Soil Conservation Service, under contract to the Regional Planning Commission.

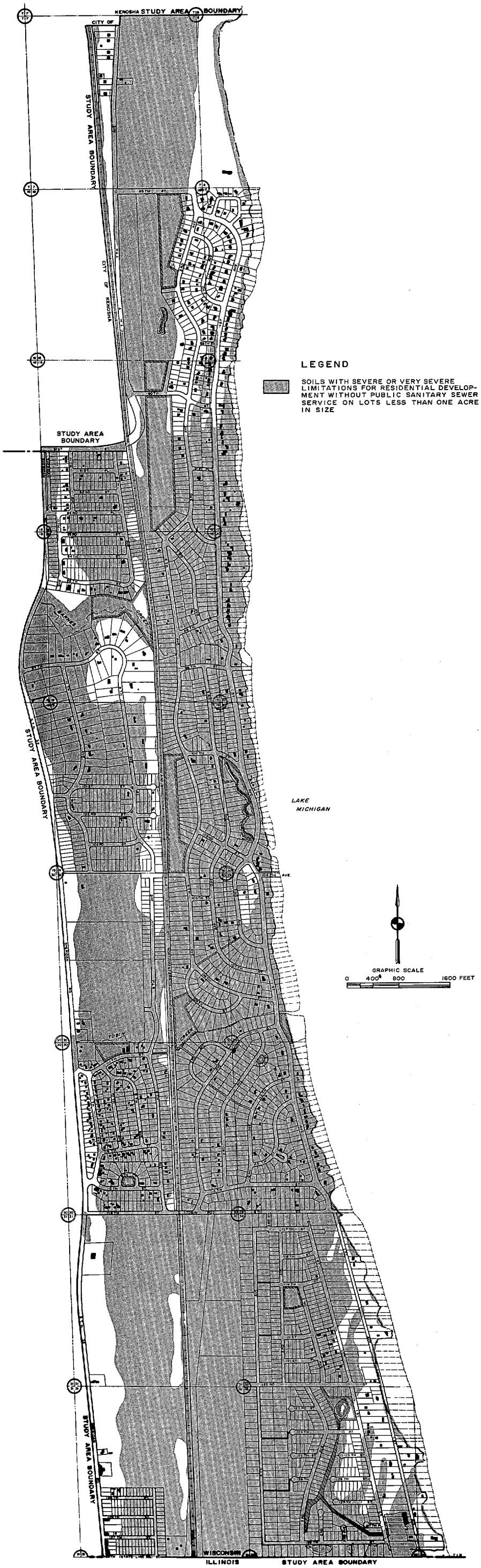
Through the use of data provided by the soil survey, the Commission staff has prepared interpretive maps showing the suitability of certain soil types for residential, recreational, and other land uses. Since much of the Chiwaukee Prairie-Carol Beach study area has been platted for residential development, attention is focused herein on the suitability of soils for such development.

Map 15 shows those portions of the Pleasant Prairie-Carol Beach study area which are covered by soils poorly suited for residential development without public sanitary sewer service on lots less than one acre in size. Most of the platted residential lots in the study area, it should be noted, are less than one-half acre in size. As shown on this map, much of the study area--1,450 acres, or 79 percent of the total area--is covered by soils which have severe or very severe limitations for such development. These soils generally have a high water table and, in some instances, low permeability rates, which prevent the proper operation of conventional onsite septic systems.

Map 16 shows those portions of the study area which are covered by soils poorly suited for residential development even with public sanitary sewer service. These areas--which encompass about 438 acres, or 24 percent of the study area--are distributed throughout the study area, being somewhat more prevalent east of the Chicago & North Western Railway, however. It is important to note that much of the study area is covered by soils having moderate limitations for residential development as a result of the high water table, which can hinder the installation and proper operation of sanitary sewers. It is recognized that potential sewer construction problems can be overcome through special techniques, including temporarily lowering the water table during construction. It is also recognized that pipe materials currently used for sanitary sewers can be operated with acceptable levels of infiltration and inflow even if installed below the water table, provided the sewers are properly designed

Map 15

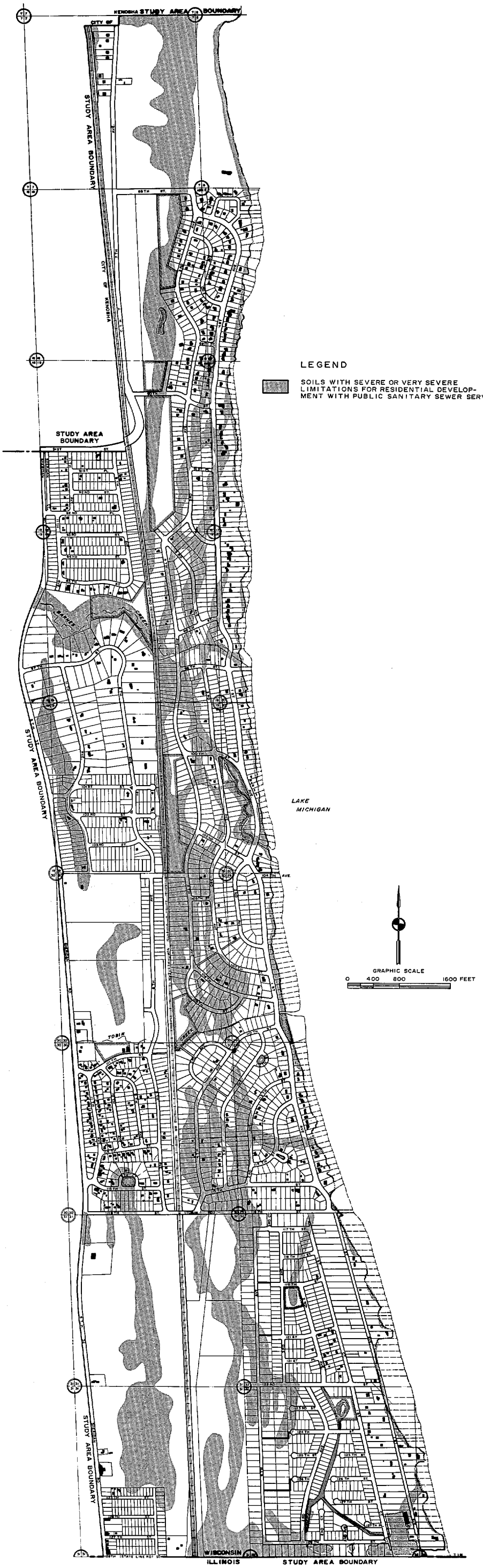
SUITABILITY OF SOILS IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA FOR RESIDENTIAL DEVELOPMENT WITHOUT PUBLIC SANITARY SEWER SERVICE



Source: SEWRPC.

Map 16

SUITABILITY OF SOILS IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA FOR RESIDENTIAL DEVELOPMENT WITH PUBLIC SANITARY SEWER SERVICE



Source: SEWRPC.

and constructed. However, the installation of sewers in areas with high groundwater levels will generally result in higher costs and a higher potential for infiltration and inflow. Thus, the identification of any future sewer service areas within the study area should take into account the prevalent high water table, the difficulties inherent in installing sanitary sewers in areas with a high water table, and the increased potential for infiltration which may cause operational problems. Furthermore, during the development process, residential units constructed in such areas should be properly sited and designed to avoid problems such as wet basements and sinking foundations which may occur in areas with high groundwater.

SEWAGE TREATMENT PROBLEMS

There is no public or private centralized sanitary sewer service within the Chiwaukee Prairie-Carol Beach study area. Wastewater from existing urban development is disposed of through the use of onsite sewage disposal systems. Data presented in this chapter indicate that those forms of urban development which generate wastewater--including residential, commercial, institutional, and intensively developed recreational land--in combination account for 260 acres, or 14 percent of the total study area. Residential land alone accounts for 237 acres, or 91 percent of this total. There were about 523 housing units in the study area by the end of 1983.

An onsite sewage disposal system which is used to serve residential and other forms of urban development where centralized sanitary sewer service is not available may be a conventional septic tank system, a mound system, or a holding tank.[16] Of these, the conventional septic tank system is the most commonly used within the study area, and only a small number of mound systems and holding tanks have been installed. In this regard, a review of sanitary permits on file in the Kenosha County Office of Planning and Zoning Administration indicated that a total of six mound systems and 18 holding tanks had been authorized for installation within the study area by 1982 (see Table 8). Other existing residential development in the study area may be assumed to be served by conventional septic tank systems.

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[16]Conventional septic tank systems consist of two components--a septic tank, or water-tight basin, which is intended to provide partial treatment of raw wastewater by skimming, settling, and anaerobic decomposition; and a soil absorption field which is intended to provide final treatment and disposal of liquid discharged from the septic tank. Both components are installed below ground surface.

Mound systems differ from conventional gravity flow septic tank systems in that they utilize mechanical facilities to pump septic tank effluent through distribution pipes placed on fill on the top of the natural soil. When in place, this fill takes on the appearance of a mound. These systems are permitted on a limited basis in Wisconsin to overcome natural soil limitations due to impermeability, high groundwater, or shallow bedrock.

A holding tank is a water-tight tank which is placed below ground surface to collect and temporarily store wastewater until such a time that disposal is convenient or the tank is filled to capacity. The wastewater is then intended to be pumped out of the holding tank into a truck and transported to a sewage treatment plant for treatment and disposal.

Table 8

MOUND SYSTEMS AND HOLDING TANKS AUTHORIZED FOR INSTALLATION AND FAILING SEPTIC TANK SYSTEMS IDENTIFIED IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA

Subarea (see Map 2)	Mound Systems Authorized: June 1982	Holding Tanks Authorized: June 1982	Failing Septic Tank Systems Identified: July 1980-June 1982[a]
A	1	1	2
B	3	8	5
C	2	8	3
D	0	0	0
E	0	1	1
Total	6	18	11

[a]Kenosha County initiated a private sewerage system regulatory program in July 1980.

Source: Kenosha County Office of Planning and Zoning Administration and SEWRPC.

Providing that the system is installed, used, and maintained properly and that there is an adequate depth of moderately permeable, unsaturated soil below the drainage field, a conventional septic tank system should operate with few problems for periods of up to 20 years. However, rural residential housing is not always developed in areas having ideal soil conditions. When septic tank systems are installed on unsuitable soils, septic effluent may not receive the benefit of soil filtration and may, instead, be discharged directly to the surface, creating a public health hazard as well as an obnoxious nuisance condition.

As noted in this chapter, most of the study area is covered by soils which are unsuitable for septic tank systems, owing to the generally high water table and, in some areas, low permeability rates. Between July 1980, when Kenosha County initiated a private sewage system regulatory program, and June 1982, the County identified 11 failing septic systems within the study area, with all of these systems serving residential structures. These 11 residential structures represent 2 percent of all residential structures in the study area. Most of these failing systems are distributed throughout the portion of the study area lying between 116th Street and 85th Street. Given the extent of existing residential development served by septic tank systems in areas covered by soils that are not suitable for such systems, there are probably many other failing septic systems in the study area. Although they are difficult to identify and are not always readily apparent even to individual property owners, such conditions must, insofar as possible, be taken into account in the identification of future sanitary sewer service areas within the study area.

SUMMARY AND CONCLUSIONS

This chapter has described the Chiwaukee Prairie-Carol Beach study area, presenting information on population levels, land use and land ownership patterns, the natural resource base, and existing sewage disposal facilities and problems. The most important inventory findings of this chapter are summarized below:

1. The Chiwaukee Prairie-Carol Beach study area is located in the eastern portion of the Town of Pleasant Prairie, Kenosha County, and is bounded by Lake Michigan on the east; by the Wisconsin-Illinois state line on the south; by STH 32 and the Chicago & North Western Railway right-of-way on the west; and by 80th Street on the north. The study area encompasses 1,825 acres, or about 8 percent of the total area of the Town of Pleasant Prairie.

2. The resident population of the study area stood at 1,402 persons in 1980. Between 1970 and 1980, the study area population increased by 286 persons, or 26 percent over the 1970 population of 1,116.

3. About 1,246 acres, or 68 percent of the study area, have been subdivided for urban residential use. Plats for certain portions of the study area were recorded during the 1920's. Most of the platting activity, however, occurred between 1947 and 1956. A total about 2,746 lots have been created through this platting activity and about 643 lots, or 23 percent of the total, are actually developed. Some of the originally platted lots are now partially or entirely submerged as a result of Lake Michigan shoreline erosion. Much of the platted land remains sparsely developed owing to the high water table and other physical development limitations in the study area.

4. Urban land uses account for 517 acres, or 28 percent of the study area, while open lands--including wetlands, woodlands, agricultural lands, and unused lands--along with surface water encompass a total of 1,308 acres, or 72 percent of the area. Residential lands and transportation and utility lands account for most of the urban uses. Residential lands encompass 237 acres, or 13 percent of the study area. Concentrations of residential land are located along the Lake Michigan shoreline, as well as in Carol Beach Estates-Unit No. 1 and Carol Beach Estates-Unit W; elsewhere, residential development is comparatively sparse and scattered. Lands devoted to transportation and utility use in the study area total 257 acres, representing 14 percent of the study area. There are 4.8 linear miles of arterial streets--consisting of STH 32 and CTH T--encompassing about 46 acres in the study area. There are 21.4 linear miles of existing local streets in the study area encompassing about 164 acres. Certain segments of the street network proposed in the original subdivision plats--in combination totaling 6.0 linear miles and encompassing about 44 acres--either were never constructed, have been overtaken by vegetation subsequent to construction, or, in one case, have been destroyed as a result of erosion of the Lake Michigan shoreline.

5. About 421 acres, or 23 percent of the study area, consisted of publicly held lands in 1982. These public lands included 73 acres held by the Town of Pleasant Prairie; 2 acres held by Kenosha County; 91 acres held by the University of Wisconsin; slightly less than 1 acre held by the Wisconsin Department of Transportation; and 254 acres consisting of street and highway rights-of-way. About 243 acres, or 13 percent of the study area, consisted of quasi-public lands. These quasi-public lands included 52 acres held by The Nature Conservancy; 145 acres held by the Wisconsin Electric Power Company; and 46 acres held by the Chicago & North Western Transportation Company. About 1,161 acres, or 64 percent

of the study area, consisted of privately held land. A total of 1,659 private interests owned real property within the study area. Of these, about 1,647 owned less than five acres of land each and together accounted for a total of 806 acres, or 44 percent of the study area.

6. The Chiwaukee Prairie-Carol Beach study area contains some of the outstanding natural resource features found within the Southeastern Wisconsin Region. Despite the inroads of urban development within the study area, much of the natural resource base remains essentially intact. Although they have been described in this chapter on an individual, element-by-element basis, the various features of the natural resource base, including wetlands, prairies, wildlife habitat areas, critical plant habitat areas, and natural areas, are not mutually exclusive, and there is considerable overlap among them. Wetlands encompass a total of 818 acres, or 45 percent of the study area. Prairies cover 860 acres, or 47 percent of the study area. Portions of the study area encompassing a total of 702 acres have been identified as wildlife habitat, including 320 acres classified as high-value wildlife habitat and 382 acres classified as medium-value habitat. Both Barnes Creek and Tobin Creek in the study area support a diverse and balanced population of forage minnows and other fish species. Areas encompassing 608 acres, or 33 percent of the study area, have been identified as critical plant habitat areas--that is, areas within which certain rare, threatened, or endangered plant species have been observed and which remain suitable for the long-term maintenance of those species. A total of seven natural areas have also been identified in the study area, with four of these--the Chiwaukee Prairie, the Kenosha Sand Dunes, the Carol Beach Low Prairie and Panne', and the Tobin Road Prairie--being ranked as natural areas of statewide or greater significance, and three of these--the Carol Beach Estates Prairie, the Barnes Creek Dunes and Panne, and the Carol Beach Prairie--being ranked as natural areas of countywide or regional significance. The Chiwaukee Prairie area has been designated a National Natural Landmark, and remains one of the most important prairies in Wisconsin. Owing to the concentration of natural resource features throughout the study area, a large portion of the area--1,264 acres, or 69 percent of the 1,825-acre study area--has been identified by the Regional Planning Commission as primary environmental corridor. Secondary environmental corridor lands have been identified as encompassing about four acres, or less than 1 percent of the total study area, while isolated natural areas have been identified as encompassing about 34 acres, or about 2 percent of the total study area.

7. The Lake Michigan shoreline along the Chiwaukee Prairie-Carol Beach study area has been identified as the most critical reach of the entire Lake Michigan coast in Wisconsin in terms of shore damage and recession rates. Long-term recession rates over the period 1835 to 1980 ranged between 1.5 feet per year and 8.8 feet per year at 19 measurement sites. Recession rates over the period 1970 to 1980 are generally lower than the 1835 to 1980 rates. However, recent recession rates of 10 feet or more per year were measured at three points along the Lake Michigan shoreline in the study area.

8. Examination of soil types within the Chiwaukee Prairie-Carol Beach study area indicates that much of the area--1,450 acres, or 79 percent of the study area--is covered by soils which have severe or very severe limitations for residential development without public sanitary sewer service on lots less than one acre in size. Most of these soils have a high water table and, in some instances, low permeability rates, which prevent proper operation of conventional onsite septic systems. Moreover, about 438 acres, or 24 percent of the study area, are covered by soils which have severe or very severe limitations for residential development even with public sanitary sewer service. Much of the remainder of the study area is covered by soils having moderate limitations for sewered residential development as a result of the prevalent high water table.

9. There is no public or private centralized sanitary sewer service within the study area. Wastewater from existing urban development--which consists primarily of residential development, including about 523 housing units, is disposed of through the use of onsite sewage disposal systems, including conventional septic tank systems, mound systems, and holding tanks. County sanitary permit files indicate that six mound systems and 18 holding tanks had been authorized for installation within the study area by 1982. Other existing development may be assumed to be served by conventional septic tank systems. Between July 1980, when Kenosha County initiated a private sewage system regulatory program, and June 1982, the County identified 11 failing septic systems within the study area. Given the extent of existing residential development served by septic tank systems in areas which are covered by soils that are not suitable for such systems, there are probably many other failing septic systems in the study area.

The inventory findings presented in this chapter suggest several conclusions which should be considered in the formulation of a land use management plan for the Chiwaukee Prairie-Carol Beach study area. First, while the future population level of the study area is partially dependent on a number of external factors, including general economic conditions, future population growth within the study area will also be dependent on the physical capability of the area to accommodate additional urban development. In view of the dominance of soils in the study area having severe limitations for residential development served by onsite soil absorption sewage disposal systems, it is clear that any significant increase in the population of the study area would require the extension of public sanitary sewer service and other urban services to serve existing and new development.

Second, the extensive amounts of environmentally significant lands in the study area on one hand and the degree to which the study area has been committed to urban development on the other hand imply that the formulation of the land use management plan for the study area will necessarily involve difficult public policy decisions to satisfactorily reconcile open space preservation and urban development objectives. The most difficult public policy decisions in this regard may be expected to involve those partially developed portions of the study area where residential development is sparse and scattered among the remaining prairie and wetland areas, and where numerous private interests have acquired platted, but undeveloped, residential lots. While natural resource features remain at least partially intact in such areas, the preservation of

these features may be difficult to achieve in view of the commitment of such areas to urban use--commitment which is reflected in the existing street pattern; in the existing, although scattered, residential development; and, perhaps most importantly, in the expectations of the many private interests which have acquired residential lots in such areas. At the same time, it must be recognized that the provision of public sanitary sewer and other services to serve such areas may be costly and inefficient because of the sparse and scattered nature of existing housing units, and the existing physical development limitations of such areas.

Chapter III

LEGAL LAND USE MANAGEMENT FRAMEWORK

INTRODUCTION

There are a variety of regulatory measures by which local, county, state, and federal units and agencies of government can shape and guide urban development or otherwise manage land use in the public interest. In combination, these measures can be viewed as an overall legal land use management framework. This chapter describes those aspects of this management framework which are particularly relevant to, and may have a bearing on, the management of land use within the Chiwaukee Prairie-Carol Beach study area. Specifically, this chapter describes the federal wetland regulatory programs administered by the U. S. Army Corps of Engineers; various state wetland, shoreland, floodplain, navigable waters, and sanitary sewer extension regulatory programs administered by the Wisconsin Department of Natural Resources; and local land use controls--including zoning and land subdivision controls--administered by Kenosha County and the Town of Pleasant Prairie as they apply to the study area.

FEDERAL WETLAND REGULATORY PROGRAMS

The U. S. Congress has provided for the regulation of certain wetlands of the nation. Two major programs have been created by acts of Congress which specifically relate to the management and protection of wetlands, including wetlands in the Chiwaukee Prairie-Carol Beach study area. These two regulatory programs are provided for in Section 404 of the Federal Water Pollution Control Act of 1972, as amended, and Section 10 of the River and Harbor Act of 1899.

Section 404, Federal Water Pollution Control Act of 1972, as Amended

Section 404 of the Federal Water Pollution Control Act of 1972, as amended, requires the U. S. Army Corps of Engineers to regulate the discharge of dredged and fill materials into waters of the United States, including lakes, rivers, and adjacent wetlands. In carrying out this function, the Corps of Engineers has adopted regulations that identify waters and adjacent wetlands in which individual permits are required for the discharge of dredged and fill materials, and other waters and adjacent wetlands which are exempt from the individual permit requirement and within which such activities may be undertaken under a "blanket," nationwide permit. In addition to such "geographic" nationwide permits for certain waters and adjacent wetlands, the Corps of Engineers has granted nationwide permits for specific activities--such as the installation, under certain conditions, of outfall structures and associated intake structures--which are judged to be environmentally insignificant. It should be noted that in Wisconsin, the geographic nationwide permits and the nationwide permits for certain specific activities are qualified by "regional conditions," or additional restrictions which are specifically designed to protect the waters and wetlands of the State. It should also be noted that the Corps of Engineers does have discretionary authority under which it can override a nationwide permit on a case-by-case basis, as it deems appropriate.

Map 17 identifies those wetland areas within the Chiwaukee Prairie-Carol Beach area which are subject to regulation through individual permits under Section 404 and those wetland areas which are subject to the geographic nationwide permit.[1] As shown on this map, most of the wetlands located east of the Chicago & North Western (C&NW) Railway right-of-way, as well as certain wetlands immediately west of that right-of-way, are subject to regulation through individual permits under Section 404. Individual permits are required in these wetlands because they are considered to be adjacent to Lake Michigan. The Corps of Engineers has indicated that upland ridges within the area identified as subject to individual Section 404 permits--ridges which are too small to be individually delineated--are not under its jurisdiction. In addition, the Corps of Engineers has indicated that certain wetlands located east of the C&NW Railway right-of-way adjacent to streams which drain into Lake Michigan may be exempt from the individual permit requirement and that the determination of permit requirements for specific projects in such wetland areas will be made on a case-by-case basis.

To streamline the Section 404 regulatory process, federal regulations provide for the advanced identification of the suitability of areas for activities involving the discharge of dredged and fill material. Under the advanced site identification process, a preliminary federal regulatory position is assumed to facilitate local planning activities. However, the process does not carry with it the presumption that a permit for the discharge of dredged or fill material will or will not be issued. Under the advanced identification process, the wetlands within the study area east of the C&NW Railway right-of-way have been designated generally unsuitable for the discharge of dredged or fill materials. While this does not preclude the granting of a Section 404 permit, it does provide a preliminary indication that the granting of a permit would be unlikely.

Section 10, River and Harbor Act of 1899

Section 10 of the River and Harbor Act of 1899 requires the U. S. Army Corps of Engineers to regulate structures or work in or affecting navigable waters of the United States. As defined by the Corps of Engineers, navigable waters of the United States include those waters which are presently used, have been used, or may be susceptible to use to transport interstate or foreign commerce, including Lake Michigan. Section 10 regulations apply to navigable waters, and associated wetlands, up to the ordinary high-water mark.

Under Section 10 of the River and Harbor Act, permits are required for the placement of structures including, but not limited to, piers, breakwaters, bulkheads, revetments, permanent mooring structures, and power transmission lines below the ordinary high water mark of navigable waters. Permits are also required for any dredging or disposal of dredged materials, filling, or other modification done below the ordinary high-water mark of a navigable water.

Executive Orders Regarding Environmental Protection

Presidential orders require federal agencies to explicitly take into account needed wetland and floodplain protection in the conduct of the agency's

[1]Work authorized by nationwide permits for specific activities, as such permits apply in Wisconsin, would not require individual Section 404 permits.

responsibilities. Executive Order 11988, issued in May 1977, requires each federal agency to "take action to reduce the risk of flood loss to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for 1) acquiring, managing, and disposing of federal lands and facilities; 2) providing federally undertaken, financed, or assisted construction and improvements; and 3) conducting federal activities and programs affecting land use including, but not limited to, water and related land resources planning, regulating, and licensing activities." Executive Order 11990, also issued in May 1977, similarly requires each federal agency to take action to "minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands" in carrying out the agency's responsibilities with respect to the activities noted above. These executive orders also prescribe specific procedures which federal agencies must follow to prevent the undue loss of wetland and floodplain areas.

STATE POLICIES AND REGULATORY PROGRAMS

A number of policies and regulatory programs of the State of Wisconsin have a direct bearing on the use of the land and water resources of the Chiwaukee Prairie-Carol Beach area. Almost invariably, the statutes and programs which are discussed below rely heavily on strong and direct participation by local units of government. Moreover, it is at that level of government where the legislation will probably succeed or fail.

Chapter NR 1.95--Wetlands Preservation, Protection, and Management

The State of Wisconsin wetlands preservation, protection, and management policies are set forth in Chapter NR 1.95 of the Wisconsin Administrative Code. Specifically, Chapter NR 1.95 establishes the rules by which the Wisconsin Department of Natural Resources (DNR) administers its regulatory and management authorities regarding wetlands. Such rules require the DNR to evaluate all reasonable alternatives, including the alternative of no action, in making regulatory decisions concerning such processes requiring permits as sanitary sewer extensions, dredging and filling, the construction of dams and bridges, and stream course alterations where adverse impacts to wetlands may occur as a result of such activities. In addition, land acquisition programs should emphasize acquisition of high-value wetlands; enforcement activities regarding unlawfully altered wetlands should, to the extent practicable, require restoration; and the avoidance or minimal use of wetlands should be advocated in liaison activities with federal, state, and local units and agencies of government. Administrative rules and legislation aimed at protecting and enhancing wetland values and ecology, and at providing education about wetlands, may be promulgated by the DNR.

Shoreland and Floodplain Zoning in Wisconsin

The Water Resources Act of 1965 was adopted by the State Legislature in recognition of the adverse effects that water pollution had on the public health and general welfare of the citizens of the State. It set in motion a comprehensive program to protect human life and health; fish and aquatic life; scenic and ecological values; and domestic, municipal, recreational, industrial, agricultural, and other uses of water. The Act attempts to achieve these objectives

by mobilizing efforts and resources at all levels of government to enhance the quality of all the waters of the State. Toward that end, the State Legislature authorized and required the zoning of shorelands and floodplains.

Shoreland Regulations: Section 59.971 of the Wisconsin Statutes requires counties of the State to enact ordinances to regulate all shoreland areas within the unincorporated areas of the counties. The regulations apply to lands within the following distances from the ordinary high-water mark of navigable waters: 1,000 feet from a lake, pond, or flowage, and 300 feet from a river or stream, or to the landward side of a floodplain, whichever distance is greater. The standards and criteria for the ordinances are set forth in Chapter NR 115 of the Wisconsin Administrative Code. They include restrictions on lot sizes, building setbacks, filling, grading, and dredging, and sanitary regulations. Counties are required to keep their regulations current and effective in order to remain in compliance with the statutes and minimum standards established by the Wisconsin Department of Natural Resources. In the event that the county fails to meet the standards, the DNR will adopt a shoreland ordinance to be administered by that county.

The shoreland area within the Chiwaukee Prairie-Carol Beach area, based upon navigability determinations made by the Wisconsin Department of Natural Resources in 1984, is shown on Map 18. The Department's navigability determinations are based on physical observations and navigation in fact of the streams and ponds involved. The Department has indicated that there may be other small navigable ponds in the area in addition to those identified in its 1984 field surveys and, accordingly, that the shoreland area identified on Map 18 is the minimum area which must be governed by shoreland regulations.

Under Chapter NR 115, all counties in the State must place wetlands five acres or more in size and located within the statutory shoreland zoning jurisdiction area in a shoreland-wetland zoning district to ensure their preservation.[2] A Wetlands Mapping Program currently being conducted by the DNR will result in the preparation of wetland maps covering the entire State and will be utilized in the identification of wetlands to be regulated under NR 115. Counties will have six months after the receipt of the final wetland inventory maps to amend shoreland zoning ordinances to protect the mapped wetlands. Only those wetlands in the shoreland areas will be regulated under NR 115. The Wisconsin Wetlands Mapping Program is described later in this section.

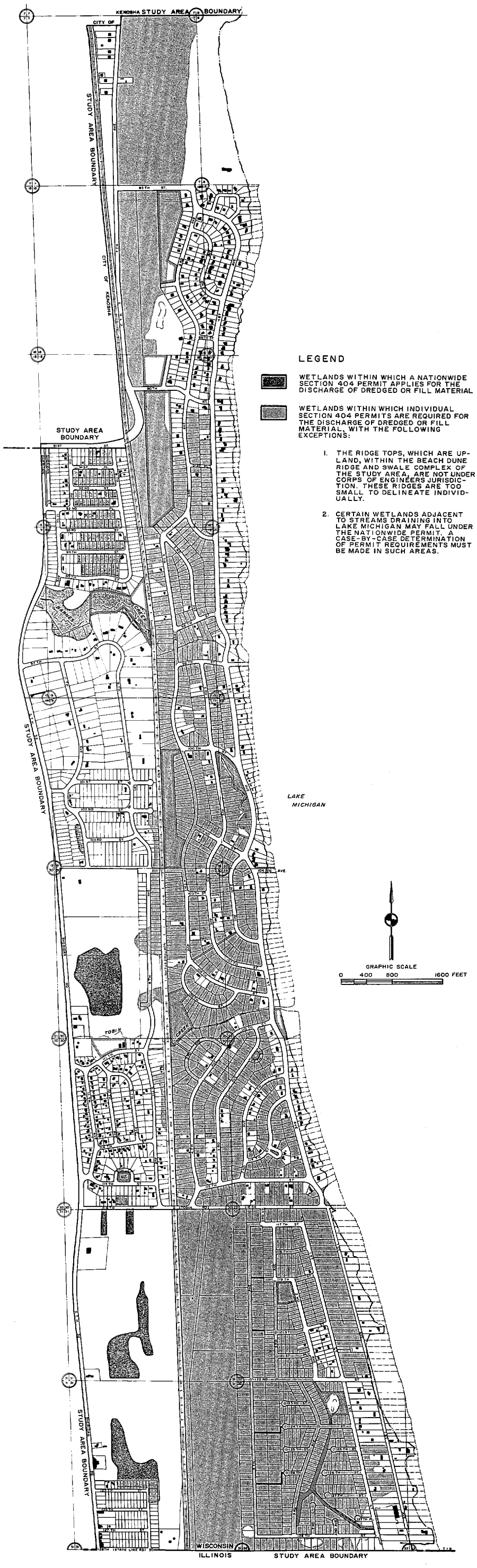
It should be noted that Kenosha County has not placed all of the wetlands located in the shoreland jurisdiction area in a shoreland-wetland zoning district. The findings and recommendations of this planning program are intended to provide a basis for determining, within the context of Chapter NR 115, which wetlands will be placed in such a district.

Floodplain Protection: The Water Resources Act also provides for the regulation of floodplains. The delineation of floodplains and the minimum criteria that the regulations must meet are set forth in Chapter NR 116 of the Wisconsin

[2]Chapter 330, Laws of 1981, enacted on April 29, 1982, requires that cities and villages also place wetlands located in the statutory shoreland zoning jurisdiction area in a shoreland-wetland zoning district. Administrative regulations implementing this law are set forth in Chapter NR 117 of the Wisconsin Administrative Code.

Map 17

FEDERAL SECTION 404 JURISDICTION AREA IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA



LEGEND

WETLANDS WITHIN WHICH A NATIONWIDE SECTION 404 PERMIT APPLIES FOR THE DISCHARGE OF DREDGED OR FILL MATERIAL

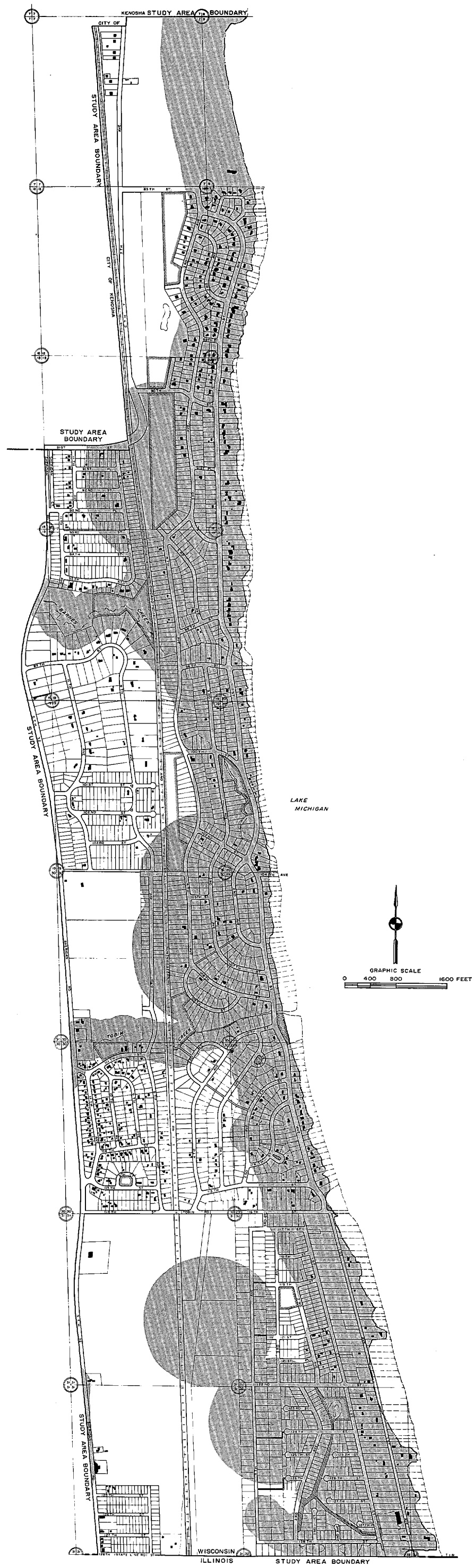
WETLANDS WITHIN WHICH INDIVIDUAL SECTION 404 PERMITS ARE REQUIRED FOR THE DISCHARGE OF DREDGED OR FILL MATERIAL, WITH THE FOLLOWING EXCEPTIONS:

1. THE RIDGE TOPS, WHICH ARE UPLAND, WITHIN THE BEACH DUNE RIDGE AND SWALE COMPLEX OF THE STUDY AREA, ARE NOT UNDER CORPS OF ENGINEERS JURISDICTION. THESE RIDGES ARE TOO SMALL TO DELINEATE INDIVIDUALLY.
2. CERTAIN WETLANDS ADJACENT TO STREAMS DRAINING INTO LAKE MICHIGAN MAY FALL UNDER THE NATIONWIDE PERMIT. A CASE-BY-CASE DETERMINATION OF PERMIT REQUIREMENTS MUST BE MADE IN SUCH AREAS.

Source: U. S. Army Corps of Engineers and SEWRPC.

Map 18

STATUTORY SHORELAND ZONING JURISDICTION AREA IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY ARE



Source: Wisconsin Department of Natural Resources and SEWRPC.

Administrative Code. The statutes mandate that the floodplain zoning ordinances be adopted by the appropriate jurisdiction--county, city, or village. If a county, city, or village fails to adopt such an ordinance, the Wisconsin Department of Natural Resources may, upon its own motion or upon the petition of a municipality or of another state agency, hold a public hearing and fix the limits and regulate the use of any floodlands, an action that will have the same effect as if adopted by the local jurisdiction. Modification of any local ordinance, once adopted, requires written approval of the Wisconsin Department of Natural Resources.

When a violation of any ordinance occurs through the construction of a structure, fill, or development in the floodplain, it is deemed to constitute a public nuisance and, as such, may be enjoined through an action by a municipality or by the State or any of its citizens.

It should be noted that Kenosha County has adopted floodplain regulations in conformance with Chapter NR 116 of the Wisconsin Administrative Code. These regulations apply to the floodplains identified on Map 9 in Chapter II of this report.

Chapter 30, Navigable Waters, Harbors, and Navigation

Under Chapter 30 of the Wisconsin Statutes, the Wisconsin Department of Natural Resources has the authority to regulate the deposition of materials upon the bed of any navigable body of water; the straightening or altering of stream courses; the dredging of material from the bed of a lake or river; the enlargement of any navigable waterway; and diversions from any body of water. Navigable waters include those wetland areas below the ordinary high-water mark of an adjacent navigable lake or stream. The issuance of a Chapter 30 permit for any of the above-mentioned activities in navigable waters would be subject to the policies stipulated in Chapter NR 1.95 of the Wisconsin Administrative Code, as described above, and to the provisions of the Wisconsin Environmental Policy Act, which established a state policy to encourage harmony between human activity and the environment, to promote efforts to reduce damage to the environment, and to stimulate an understanding of important ecological systems.

Chapter 31, Regulation of Dams and Bridges Affecting Navigable Waters

Under Chapter 31 of the Wisconsin Statutes, the Wisconsin Department of Natural Resources has authority to regulate the location, construction, and operation of dams and bridges affecting a navigable body of water. The issuance of a Chapter 31 permit would also be subject to the policies stipulated in Chapter NR 1.95 of the Wisconsin Administrative Code and to the provisions of the Wisconsin Environmental Policy Act.

Wisconsin Wetland Inventory

In response to public concern that many acres of wetlands throughout the State are being lost each year, the Wisconsin Legislature, in Chapter 23.32 of the Wisconsin Statutes, directed the conduct of a statewide wetlands inventory. Responsibility for this inventory and attendant mapping program was assigned by the Legislature to the Wisconsin Department of Natural Resources. The objective of the Wetlands Mapping Program is to systematically identify, delineate, and classify all wetlands of five acres or more in size in accordance with

statewide standards. For the purposes of this mapping program, the Legislature defined a wetland as "an area where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which has soils indicative of wet conditions."[3] In accordance with this definition, wetlands ranging from cat-tail marshes, bogs, and tamarack swamps to areas covered by poorly drained soils and supporting wetland types of vegetation such as sedge meadows and shrub carrs are to be delineated in the inventory and mapping program.

The Wisconsin Department of Natural Resources contracted with the Regional Planning Commission to conduct the Wetland Mapping Program in southeastern Wisconsin. Historically, the Commission has identified and delineated wetlands in the Region as necessary for its planning programs. However, the Commission has now refined this past work in accordance with the state standards using aerial photographic interpretation.

The wetland areas for Kenosha County have been delineated on 1 inch equals 2,000 feet scale, ratioed and rectified aerial photographs. The mapped areas have been checked for consistency against U. S. Soil Conservation Service soil survey maps, the best available topographic maps, and the Commission's own historic wetland delineations. Field checks were conducted to verify the wetland boundaries. These wetland delineations are consistent with, and have been incorporated into, the various inventory maps which have been prepared for use in this planning program for the Chiwaukee Prairie-Carol Beach study area.

It should be noted that the wetland maps which have been prepared for Kenosha County are preliminary maps. Under the procedures established by the Department of Natural Resources and set forth in Chapter NR 115, such preliminary maps are provided to the counties concerned for review. Chapter NR 115 requires that the county zoning committee hold at least one public hearing to receive comments on accuracy and completeness of the preliminary wetland maps. Subsequently, the county zoning committee will meet with the Department of Natural Resources to discuss any changes to the maps recommended by the county. Finally, the Wisconsin wetlands inventory staff will prepare final wetland maps for the county. As previously noted, the county will then have six months to amend its shoreland zoning ordinance to protect the mapped wetlands.

Review of Sanitary Sewerage System Plans

Under Chapter 144 of the Wisconsin Statutes, the Department of Natural Resources is required to review and take action to either approve, approve conditionally, or reject plans for proposed sewage treatment plants and sewerage systems, including all extensions of sanitary sewers. Chapter NR 110 of the Wisconsin Administrative Code sets forth the procedures to be followed and criteria to be used by the Department of Natural Resources in the review of such proposals. Under Section NR 110.08(4), all sewerage system plans must be in conformance with an approved areawide waste treatment management plan, if such a plan exists. As indicated in Chapter I, such a plan has been prepared and adopted by the Regional Planning Commission for the Southeastern Wisconsin Region and endorsed by the Wisconsin Department of Natural Resources. The recommendations of this plan are, however, necessarily general and do not reflect detailed local planning considerations. The sanitary sewer service area

[3]Wis. Stats. 23.32(1).

recommendations of the land use management plan for the Chiwaukee Prairie-Carol Beach study area as set forth in Chapter V of this report are intended to constitute an amendment to the sewer service area recommendations contained in the regional plan and to be used by the Department of Natural Resources, as well as by the Regional Planning Commission, in the review of specific sewerage system proposals in the study area.

Environmental Impact Statement

Under Section 1.11 of the Wisconsin Statutes, the Wisconsin Environmental Policy Act, each state agency is required to consider the environmental implications of all its actions and proposals. Before proceeding with any major action significantly affecting the quality of the environment, a detailed statement concerning the environmental effects of the proposed action and alternatives must be prepared.

The Wisconsin Department of Natural Resources has determined that, pursuant to the Wisconsin Environmental Policy Act, an environmental impact statement must be prepared for Department approval of an amendment of the areawide water quality management plan for the Chiwaukee Prairie-Carol Beach area. The Department has further determined that the environmental impact statement should also evaluate the environmental consequences of departmental approval of Kenosha County's shoreland-wetland zoning ordinance as it pertains to the definition of a sewer service area plan for the study area. The environmental impact statement was determined to be necessary because of the sensitive and unique environmental resources found in the Chiwaukee Prairie-Carol Beach area and the conflicting urban development and open space preservation objectives within the area.

Chapter NR 150 of the Wisconsin Administrative Code prescribes the contents of an environmental impact statement and related procedural requirements. Final Department action on an areawide water quality management plan amendment for the study area cannot be taken until the environmental impact statement process, as prescribed in Chapter NR 150 of the Wisconsin Administrative Code, has been completed. To avoid unnecessary delay and duplication of effort, the Department has determined that the environmental impact statement would be prepared concurrently with the Chiwaukee Prairie-Carol Beach planning program. This approach enabled the Department to proceed with analysis of alternative plan proposals and their environmental consequences under the environmental impact statement process in parallel with the planning work itself.

COUNTY AND LOCAL LAND USE REGULATION

Two important types of land use regulation adopted and administered by Kenosha County--namely, floodplain regulations and shoreland regulations--were described in the section of this chapter on state policies and regulations. This section describes other county and local land use controls which have a direct bearing on the management of land use in the Chiwaukee Prairie-Carol Beach study area, including general zoning, subdivision control ordinances, and the county sanitary code and private sewerage system ordinances.

General Zoning Ordinance

Zoning ordinances represent one of the most important means available to county and local units of government for managing land use in the public interest. In Wisconsin, counties may enact a general, or comprehensive, zoning ordinance covering all unincorporated areas of the county. Such a county zoning ordinance, however, becomes effective only in those towns which act to ratify the county ordinance.

Kenosha County adopted a new county zoning ordinance in 1983, replacing a zoning ordinance adopted by the County in 1959. The new county ordinance was subsequently adopted by the Town of Pleasant Prairie in 1984. Existing zoning districts in the Chiwaukee Prairie-Carol Beach area are shown on Map 19.

About 1,082 acres, or about 59 percent of the total study area, have been zoned for residential use. Specifically, about 922 acres have been placed in the R-5 Urban Single-Family Residential District; about 153 acres have been placed in the R-6 Urban Single-Family Residential District; and about 7 acres have been placed in the R-11 Multiple-Family Residential District (see Table 9). It should be noted that some of the areas which have been placed in the R-5 Urban Single-Family Residential District have also been placed in the UHO Urban Land Holding Overlay District. That overlay district indicates that the land is expected to undergo urban development in accordance with the underlying zoning district, but that such development is not permitted at the present time because of one or more deficiencies, such as the lack of essential services or the need to provide access to landlocked areas. New uses are not permitted in such areas until the overlay district is removed. About 179 acres, or about 19 percent of the land in the R-5 Urban Single-Family Residential District, have been placed in the UHO Urban Land Holding Overlay District.

As indicated in Table 9, conservancy zoning districts account for about 359 acres, or about 20 percent of the study area. The C-1 Lowland Resource Conservancy District, which is intended to protect water, wetlands, and other areas that are not naturally drained, has been applied to 348 acres, or about 19 percent of the study area. The C-2 Upland Conservancy District, which is intended to protect significant woodlands, areas of rough topography, and related scenic areas, has been applied to about 11 acres, or less than 1 percent of the study area.

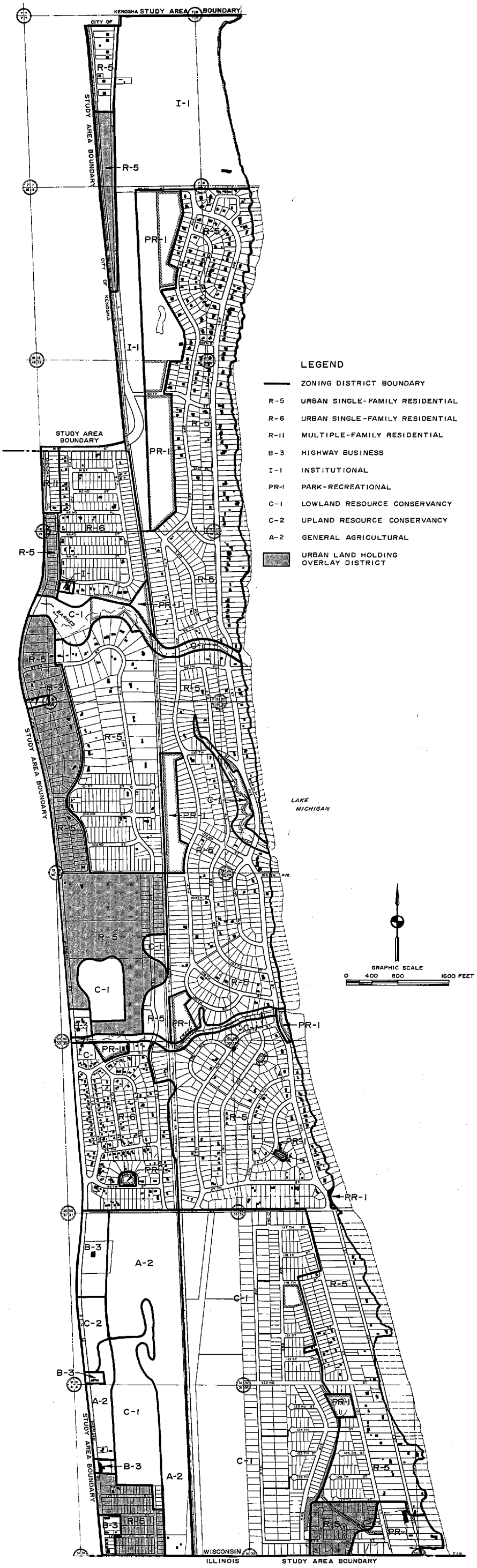
Zoning districts within the balance of the study area include the B-3 Highway Business District, which encompasses about 26 acres, or less than 2 percent of the study area; the I-1 Institutional District, which encompasses about 151 acres, or about 8 percent of the study area; the PR-1 Park-Recreational District, which encompasses about 108 acres, or about 6 percent of the study area; and the A-2 General Agricultural District, which encompasses about 99 acres, or about 5 percent of the study area.

Subdivision Control Ordinances

Kenosha County approved and adopted a subdivision control ordinance in 1971. This ordinance governs the division of land in all unincorporated areas of the County. The Town of Pleasant Prairie has also adopted a subdivision control ordinance governing the division of land within the Town. Both ordinances set

Map 19

EXISTING ZONING DISTRICTS IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA: 1984



Source: Kenosha County Department of Planning, Zoning and Sanitation; and SEWRPC.

forth procedures to be followed by the owner/developer in the submission of preliminary and final plats. The ordinances regulate the form of proposed urban development through design standards regarding streets and other development features. The division of land within the Town of Pleasant Prairie must be in accord with both the town and county ordinances. Where differences between the ordinances exist, the more stringent regulations shall be met.

County Sanitary Code and Private Sewerage System Ordinance

A county sanitary code and private sewerage system regulatory ordinance became effective in Kenosha County in July 1980. This ordinance regulates the location, construction, installation, alteration, design, use, and maintenance of private waste disposal and private water systems in the County. Regulations in the ordinance pertaining to private sewerage systems apply throughout the County, including cities and villages as well as unincorporated areas. Sections 59.065 and 145.01(15) of the Wisconsin Statutes require that all Wisconsin counties, except counties with a population of 500,000 or more, adopt and administer an ordinance regulating private sewerage systems within the county.

The county sanitary code establishes site requirements for soil absorption sewage disposal systems, including percolation rates and minimum allowable depth to groundwater and bedrock. Under the ordinance, holding tanks are generally permitted to remedy failing conventional septic tank systems or failing mound systems. Holding tanks are also permitted to serve new construction on lots of record created on or before July 1, 1980. As noted in Chapter II of this report, there are more than 2,000 vacant lots in the study area within subdivisions recorded prior to this date.

SUMMARY AND CONCLUSIONS

This chapter has described the various local, county, state, and federal regulatory measures which are particularly relevant to, and may have a bearing on, the management of land use within the Chiwaukee Prairie-Carol Beach study area. The most important findings of this chapter are summarized below.

1. The U. S. Army Corps of Engineers administers two regulatory programs for the management of water and adjacent wetlands--the federal Section 404 regulatory program and the federal Section 10 regulatory program. The Section 404 program, in particular, has a direct bearing on the use of wetlands in the Chiwaukee Prairie-Carol Beach area. Section 404 of the Water Pollution Control Act of 1972, as amended, requires the U. S. Army Corps of Engineers to regulate the discharge of dredged and fill materials into waters of the United States, including lakes, rivers, and adjacent wetlands. The Corps of Engineers has determined that most of the wetlands located east of the Chicago & North Western (C&NW) Railway right-of-way in the study area are subject to regulation through individual Section 404 permits. Thus, individual Section 404 permits are required for most activities involving the discharge of dredged or fill materials in these wetlands. Moreover, through an "advanced identification process," the Corps of Engineers has determined that the wetlands located east of the C&NW Railway right-of-way in the study area are generally unsuitable for the discharge of dredged or fill materials.

Table 9

SUMMARY OF GENERAL ZONING DISTRICTS IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA: 1984

Zoning District	Principal Uses	Minimum Lot Requirements		Portion of Study Area in District	
		Area	Width	Acres	Percent of Study Area
R-5 Urban Single-Family Residential	One single-family dwelling; certain community living arrangements and foster family homes; essential services	10,000 square feet	75 feet	922[a]	50.5
R-6 Urban Single-Family Residential	One single-family dwelling; certain community living arrangements and foster family homes; essential services	6,000 square feet	60 feet	153	8.4
R-11 Multiple-Family Residential	Multiple-family dwellings; certain community living arrangements and foster homes; essential services	20,000 square feet or 3,000 square feet per unit, whichever is greater	120 feet	7	0.4
B-3 Highway Business	Highway-oriented businesses and other specified business uses	10,000 square feet if sewered; 40,000 square feet if not sewered	75 feet if sewered; 150 feet if not sewered	26	1.4
I-1 Institutional	Churches; hospitals, sanitariums, nursing homes, and clinics; libraries, museums, and art galleries; private youth development organizations; public or private schools, colleges, and universities; public administrative offices and public service buildings; public utility offices	10,000 square feet if sewered; 40,000 square feet if not sewered	75 feet if sewered; 150 feet if not sewered	151	8.3
PR-1 Park-Recreational	Bike trails; boat rental and boat access sites; botanical gardens; cross-country ski trails; fairgrounds; historic monuments or sites; hiking and nature trails and walks; hunting and fishing clubs; neighborhood tot lots; outdoor skating rinks; parks and playgrounds; picnicking areas; playfields and athletic fields; ski hills without facilities; sledding, skiing, or tobogganing; tennis courts	--	--	108	5.9

Table 9 (continued)

Zoning District	Principal Uses	Minimum Lot Requirements		Portion of Study Area in District	
		Area	Width	Acres	Percent of Study Area
C-1 Lowland Resource Conservancy	Fishing; grazing; hunting; preservation of scenic, historic, and scientific areas; public fish hatcheries; public parks where left in a natural, undeveloped, open space use; sustained yield forestry; stream bank and lakeshore protection; water retention and wildlife preserves; agricultural uses, provided they do not involve extension of cultivated areas or extension of or creation of new drainage systems, and provided they do not substantially impair the natural fauna, flora, topography, or water regimen	--	--	348	19.1
C-2 Upland Resource Conservancy	Agricultural uses; hunting and fishing; preservation of scenic, historic, and scientific areas; forest and game management; park and recreation areas; one single-family dwelling	5 acres	300 feet	11	0.6
A-2 General Agricultural	General agricultural uses; one farm dwelling; essential services; animal hospitals, shelters, commercial boarding and riding stables, and veterinary services; certain community living arrangements and foster family homes; equestrian trails; riding academies	10 acres	300 feet	99	5.4

[a]A total of 179 acres, or 19 percent of the area in the R-5 Urban Single-Family Residential District, have also been placed in the UHO Urban Land Holding Overlay District. That Overlay District indicates that the land is expected to undergo further urban development in accordance with the underlying zoning, but that such development is not permitted at the present time because of the existence of one or more deficiencies such as the lack of essential services or the need to provide access to landlocked lands. New uses are not permitted until the overlay district is removed.

Source: Kenosha County Office of Planning and Zoning Administration; and SEWRPC.

While this does not preclude the granting of Section 404 permits, it does provide a preliminary indication that the granting of such a permit would be unlikely.

2. Under Section 10 of the River and Harbor Act of 1899, the U. S. Army Corps of Engineers regulates structures or work in or affecting the navigable waters of the United States, including Lake Michigan. Section 10 regulations apply to commercially navigable waters, and associated wetlands, up to the ordinary high-water mark. Under Section 10 of the River and Harbor Act, permits are required for the placement of structures--including, but not limited to, piers, breakwaters, bulkheads, revetments, permanent mooring structures, and power transmission lines--below the ordinary high-water mark of navigable waters.

3. The Wisconsin Department of Natural Resources administers a variety of regulatory programs that are intended to protect and preserve the natural resource base, including shoreland, floodplain, navigable waters, and sanitary sewer regulatory programs. The shoreland and sanitary sewer regulatory programs have a particularly important bearing on the management of the natural resource base of the study area. Under Section 59.971 of the Wisconsin Statutes, counties of the State are required to regulate shorelands within unincorporated areas. Shorelands are defined as lands within the following distances of the ordinary high-water mark of navigable waters: 1,000 feet from a lake, pond, or flowage; and 300 feet from a river or stream, or to the landward side of a floodplain, whichever distance is greater. Under Chapter NR 115 of the Wisconsin Administrative Code, county shoreland regulations must include restrictions on lot sizes, building setbacks, and filling and grading. Moreover, under Chapter NR 115, wetlands five acres or more in size located within the statutory shoreland zoning jurisdiction area must be placed in a shoreland-wetland zoning district. Kenosha County has adopted shoreland regulations governing shorelands in the unincorporated area of the County. The County has not, however, placed all of the wetlands located within the shoreland jurisdiction area of the study area in a shoreland-wetland zoning district.

4. Under Chapter 144 of the Wisconsin Statutes, the Wisconsin Department of Natural Resources is required to review and take action to either approve, approve conditionally, or reject plans for proposed sewage treatment plants and sanitary sewer extensions. Under Section NR 110.08(4) of the Wisconsin Administrative Code, all sewerage system plans must be in conformance with an approved areawide wastewater treatment management plan, if such a plan exists. Such a plan has been prepared and adopted for southeastern Wisconsin by the Regional Planning Commission and endorsed by the Wisconsin Department of Natural Resources. The recommendations of the plan are, however, necessarily general and do not reflect detailed local planning considerations. The sanitary sewer service area recommendations of the land use management plan set forth in this report are intended to constitute an amendment to the sewer service area recommendations of the regional plan and to be used by the Department of Natural Resources, as well as by the Regional Planning Commission, in the review of specific sewer extension proposals in the study area.

5. In Wisconsin, counties may enact a general, or comprehensive, zoning ordinance covering all unincorporated areas of the county. Such a county zoning ordinance, however, becomes effective only in those towns which act to ratify the county ordinance. Kenosha County adopted a new county zoning ordinance in 1983, replacing a zoning ordinance adopted by the County in 1959. The new zoning ordinance was ratified by the Town of Pleasant Prairie in 1984. Under that zoning ordinance, about 1,082 acres, or about 59 percent of the study area, have been placed in residential zoning districts, including 922 acres in the R-5 Urban Single-Family Residential District, 153 acres in the R-6 Urban Single-Family Residential District, and 7 acres in the R-11 Multiple-Family Residential District. About 359 acres, or about 20 percent of the study area, have been placed in conservancy zoning districts, including 348 acres in the C-1 Lowland Resource Conservancy District, and 11 acres in the C-2 Upland Resource Convervancy District. Other zoning districts in the study area include the B-3 Highway Business District--26 acres, or less than 2 percent of the study area; the I-1 Institutional District--151 acres, or about 8 percent of the study area; the PR-1 Park-Recreational District--108 acres, or about 6 percent of the study area; and the A-2 General Agricultural District--99 acres, or about 5 percent of the study area.

6. A county sanitary code and private sewerage system regulatory ordinance became effective in Kenosha County in July 1980. This ordinance regulates the location, construction, installation, alteration, design, and use of private waste disposal and private water systems in the County. It should be noted that, under the ordinance, holding tanks are generally permitted to remedy failing septic tank systems and, moreover, are permitted to serve new construction on lots of record created on or before July 1, 1980. As noted in Chapter II of this report, there are more than 2,000 vacant lots in the study area within subdivisions recorded prior to that date.

As indicated above, the use of land within the Chiwaukee Prairie-Carol Beach area--particularly the use of wetlands--is subject to regulation at the local, state, and federal levels of government. Regulations of the U. S. Army Corps of Engineers require individual permits for fill activities within most of the wetland areas located east of the C&NW Railway right-of-way, and the Corps of Engineers has determined, through an advanced identification process, that those wetlands are generally unsuitable for such activities. State law requires that counties act to place wetlands that are located within the statutory shoreland jurisdiction area in a conservancy zoning district, thus potentially prohibiting urban development in many wetland areas in the Chiwaukee Prairie-Carol Beach area. The Kenosha County zoning ordinance precludes urban development in certain wetland areas in the Chiwaukee Prairie-Carol Beach area, and permits urban development in other wetland areas, including many within the statutory shoreland jurisdiction area. One of the primary objectives of this planning program is the achievement of a consensus among the concerned agencies and units of government regarding the significance of the environmental values in the Chiwaukee Prairie-Carol Beach study area, and the need for the preservation in open space use of specific areas, thereby providing a common basis for the administration of the various regulatory authorities.

Chapter IV

ALTERNATIVE LAND USE MANAGEMENT PLANS

INTRODUCTION

As noted in Chapter I of this report, the primary purpose of the Chiwaukee Prairie-Carol Beach planning program is to develop a land use management plan which reconciles valid but sometimes conflicting open space preservation and urban development objectives within the study area. Such a plan should, at a minimum, identify areas which may be developed in urban use and areas which should be preserved in an essentially natural, open condition. In addition, such a plan should identify areas which should be provided with public sanitary sewer service.

A series of three basic alternative land use management plans has been developed for the Chiwaukee Prairie-Carol Beach area, each proposing a different development-preservation pattern for the area. The three plans are: 1) a maximum development plan; 2) a maximum preservation plan; and 3) a combination development-preservation plan. While many variations of these basic alternative plans are possible, it is believed that the three alternative plans described in this chapter are representative of the basic, practical options available for the area.

As its name implies, the maximum development plan envisions the highest level of development among the alternatives. Under this plan, the vast majority of platted lots in the area would be developed in residential use, regardless of the natural resource values which they encompass.

Conversely, the maximum preservation plan envisions the most extensive preservation of open space among the alternatives. This plan envisions the preservation of almost all areas of environmental significance in the area, including substantial areas which have been subdivided into residential lots. This plan further envisions the restoration of certain environmentally significant areas which have been partially developed for urban use.

The combination development-preservation plan represents a conscious attempt to accommodate significant urban development within the area, while preserving the most important natural features of the area. The plan stands, in effect, as a middle ground between the maximum development and maximum preservation plans.

BASIC PLAN CONCEPTS

Certain basic concepts which apply to each of the plan alternatives warrant explicit presentation.

1. As land use and management plans, the alternative plans identify and set forth proposals for generalized, rather than detailed, categories of land use. Each plan includes proposals regarding the location and extent of areas to be allocated to "urban," "open space preservation," and "rural" uses within the area. Those areas identified in the plans as urban would be devoted primarily to single-family residential use,

but could also encompass limited amounts of other urban uses, including intensive recreational and limited commercial and institutional uses. Those areas identified as open space preservation areas would be maintained in essentially an open, natural condition. Those areas identified in the plans as rural would be devoted primarily to agricultural use.

2. As noted above, each of the alternative plans includes open space preservation areas. These areas contain concentrations of significant natural resources within the study area which serve several important functions. Among these functions are the protection of surface water and groundwater quality, the provision of food and cover for wildlife which live in, or migrate through, the study area, and the provision of opportunities for scientific or educational, as well as recreational, pursuits. The conservation and wise use of the natural resources of the area can contribute to the sound physical, social, and economic development of the area, and provide a healthy and attractive environment in which to live. Thus, to the extent possible under the assumptions of the specific alternatives, the alternatives identify open space preservation areas which contain natural resources that should be preserved.

3. The alternative plans envision that certain lands within the open space preservation areas will be acquired over time at fair market value, assuming a willing buyer and a willing seller. Acquisition provides the greatest assurance that open space areas will be permanently preserved in a natural, open condition. While the emphasis in the alternative plans is on the acquisition of platted lands, unplatted lands could also be acquired depending on the interests of the parties involved in acquiring the land. Estimates of the open space acquisition costs for platted lands have been developed for each alternative plan, based upon assessed property values.[1] The open space acquisition proposals presented in this chapter should be considered preliminary in nature and subject to revision, as plan implementation recommendations are formulated, following the selection of a recommended plan.

4. The maximum development, maximum preservation, and combination development-preservation plan alternatives are all described under ultimate development conditions--that is, assuming development of all residential lots within the areas identified for urban use under each plan. Estimates of the number of housing units within the area under ultimate development conditions for each respective plan were made assuming that all remaining platted lots would be developed as individual home sites.[2] The actual number of housing units under ultimate development conditions could be somewhat lower than projected, however, depending upon the

[1]Under the countywide assessment program in Kenosha County, the assessed valuation of property is intended to represent full market value, as determined by the county assessor. Property values as indicated on the 1981 assessment roll were used in the estimation of open space acquisition costs.

[2]In estimating the number of housing units under ultimate development conditions, it was assumed that no additional housing units would be constructed on partially eroded lots along the Lake Michigan shoreline where the distance between the street right-of-way and the inland edge of the beach was less than 200 feet.

extent to which property owners, particularly owners of small lots, combine two or more platted lots to create larger home sites. The growth of the area may be expected to be influenced by a number of other factors as well, including the availability and cost of public facilities and services, the physical suitability--including soil suitability--of the area for residential development, the overall quality of the environment of the area, accessibility, and the general demand for housing in the Kenosha area.

Estimates of the resident population levels within the study area under ultimate development conditions under each alternative plan were derived from the anticipated number of housing units. The population estimates assume that all additional housing units constructed within the study area will be intended for year-round occupancy; that those housing units now used on a seasonal basis, which comprised about 10 percent of the housing units in the study area in 1980, will eventually be converted to year-round occupancy; that the vacancy rate will approximate 3 percent; and that, under ultimate development, the average household size in the study area will approximate 3.0 persons per household, a decline from the average household size in the study area of 3.2 persons in 1980 and 3.5 persons in 1970.

5. The maximum development, maximum preservation, and development-preservation plans all envision that public sanitary sewer service and water supply service will be eventually extended to all urban areas identified in the respective plans. The plans also envision that required street improvements and improvements to the stormwater drainage system will be undertaken as needed and as development occurs. The capital costs attendant to these public improvements have been estimated for each alternative plan.

   The alternative plans envision that sanitary sewage from the study area will be conveyed to the City of Kenosha sewerage system for treatment and disposal. The sewerage system costs presented in this chapter represent the costs of constructing the sewage collection system required to serve the urban areas identified under the respective plans. The cost of the trunk sewer from the City of Kenosha along 7th Avenue and Sheridan Road, proposed in the Town's long-range sewerage system plan, is not included.[3]

[3]Under the sanitary sewerage system plans conceptualized for the purpose of estimating public improvement costs for each alternative plan, the proposed trunk sewer along 7th Avenue and Sheridan Road would be used for the conveyance of at least a portion of the sewage from the study area to the Kenosha sewage treatment plant, with the plans differing somewhat in the extent of reliance on that trunk sewer. The cost of the trunk sewer was not included in the cost estimates of the sanitary sewage collection systems for the study area under the respective plans, although the cost of any needed building sewers from the trunk sewer to the lot lines of lots fronting Sheridan Road was included. The Town Engineer has indicated that the trunk sewer along 7th Avenue and Sheridan Road has been proposed and sized primarily to serve portions of the Town lying west of Sheridan Road, and that the design capacity and cost of the trunk sewer would not be substantially affected by the level of development proposed east of Sheridan Road. It has not yet been determined how the cost of the trunk sewer will be borne locally. It is possible that owners of property in the study area could be assessed a portion of that cost.

Public water supply service is presently provided within the residential area north of 90th Street and east of 7th Avenue. Service here is provided by the Pleasant Prairie Water Utility, which obtains water on a wholesale basis from the Kenosha Water Utility. The alternative plans envision that this service will be maintained and that public water supply service will be extended to all other urban areas.

The alternative plans further envision that the study area will be served by all-weather streets with rural cross-sections; that is, with road ditches, culverts, and skeletal storm sewer systems and without curbs and gutters and full storm sewer systems. Roadway conditions within the study area are presently highly varied. Certain roads have an asphalt surface and are in good condition, requiring no improvement at this time. Others are gravel roads, or asphalt or penetration macadam-surfaced roads in poor condition. In addition, certain dedicated road segments have never been constructed or have been overtaken by vegetation subsequent to initial construction. The road improvement costs presented in this chapter represent the costs of constructing or reconstructing required local roads to a good asphalt surface.

The alternative plans envision that stormwater drainage within the study area will be primarily through roadside ditches and open drainage channels. An estimate of the cost of grading or regrading roadside ditches and of drainage channel improvements has been prepared for each alternative plan.

It should be noted that the costs of constructing sanitary sewer and water supply systems and the cost of stormwater drainage improvements under the respective plans have been estimated assuming moderately wet subsurface conditions. Extremely wet subsurface conditions could be expected to result in somewhat higher public improvement costs, while dry subsurface conditions could be expected to result in somewhat lower public improvement costs, with sanitary sewer construction costs likely to be the most significantly affected.[4] More precise estimates of public improvement costs would be developed as preliminary engineering work is undertaken.

6. Although it is a serious problem within the study area, Lake Michigan shoreline erosion was not directly addressed in the alternative plans. Certain shoreland property, including certain public street segments, are particularly susceptible to damage or loss due to shoreline erosion, and further shoreline recession may be expected to occur without adequate shore protection. The projected 50-year nonstructural erosion risk line has been identified on each of the alternative plan maps to illustrate the potential extent of this problem. This line identifies those areas which may be expected to be affected by shoreline erosion during the next 50 years if no additional structural protection is undertaken.

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[4]The sanitary sewer system cost estimates were developed assuming moderately wet and stable-consolidated excavation conditions. The overall sanitary sewer construction costs for the respective plans could be expected to be up to 25 percent higher if excavation conditions are extremely wet and unstable, and up to 10 percent lower if excavation conditions are relatively dry and stable.

In the preparation of the alternative plans, it was assumed that structural shore protection would be provided to prevent any substantial shoreland loss and that the existing Lake Michigan shoreline would remain essentially intact. It is estimated that the cost of installing shore protection structures along shoreline reaches which are not effectively protected by such structures would be $4.7 million.[5] In addition, substantial costs for the maintenance of shore protection structures may be expected to be incurred. The Town, in conjunction with the property owners concerned, must determine whether structural shore protection is a financially feasible and cost-effective solution to the serious shoreline erosion problems in the area. If, and where, shore protection is found to be an inappropriate solution, existing housing units may ultimately have to be relocated and existing streets realigned. This matter should be studied by the Town before any further major public improvements or private development are undertaken within erosion-threatened areas.

7. As indicated in Chapter II, the 100-year recurrence interval floodplains along streams in the Chiwaukee Prairie-Carol Beach area are generally very narrow. The largest floodplain area is located between 1st Avenue and 3rd Avenue, north of 115th Street, along an unnamed tributary to Lake Michigan (see Map 9 in Chapter II). In the preparation of the alternative plans, it was assumed that this floodplain area will be significantly reduced through the installation of larger culverts and minimal channel improvements, with the result being that most existing platted lots in the area could be developed for residential use.

The following discussions of the alternative land use management plans describe the proposed urban, open space preservation, and rural areas envisioned; estimate the attendant housing unit and population levels; describe the proposed open space acquisition measures; describe the proposed sanitary sewer service areas; and estimate the related public infrastructure costs. For each alternative plan, pertinent data are presented for the five subareas of the study area shown on Map 2 in Chapter II of this report. A comparison of the alternative plans is presented in the final section of this chapter.

MAXIMUM DEVELOPMENT PLAN

The maximum development plan envisions an extensive area of urban use within the study area, with substantial additional development, primarily single-family residential development, occurring both east and west of the Chicago &

[5]This cost estimate is based on the application of a unit cost of $330 per foot--the estimated unit cost of installing shore protection structures with a life expectancy of 25 years or more in this area--to the total shoreline length which is not effectively protected. Based upon aerial photograph inspection and the findings of a field survey of shore protection structures conducted under the Wisconsin Coastal Management Program in 1976, it has been estimated that shoreline reaches totaling 2.7 miles, or 56 percent of the length of the Lake Michigan shoreline within the study area, are not protected by functional structures. It should be noted that the total cost of shore protection could be higher than estimated if a need develops for major improvements to structures along those reaches which were assumed to be effectively protected.

North Western Transportation Company (C&NW) railway right-of-way (see Map 20). The maximum development plan envisions that the vast majority of vacant, platted lots in the study area will be developed for single-family residential use. The notable exceptions to this are the vacant lots within, and adjacent to, the presently defined project area of The Nature Conservancy in Subarea E, and the bulk of the vacant lots within the platted subdivision located in Subarea D,[6] these lots being envisioned to be maintained in open space or rural uses. The maximum development plan also envisions that certain unplatted lands adjacent to Sheridan Road in Subarea D will be converted to urban use, assuming that sanitary sewer service is eventually extended along Sheridan Road (STH 32) to the Wisconsin-Illinois border. In addition, certain unplatted lands located east of Sheridan Road, south of 104th Street, would be converted to urban use, assuming the eventual extension of sanitary sewer service to adjacent platted areas. The urban area proposed under the maximum development plan encompasses about 1,090 acres, or about 60 percent of the study area (see Table 10).

Under the maximum development plan, the open space preservation area would consist primarily of 1) wetland-prairie areas within or adjacent to the presently defined project area of The Nature Conservancy[7]; 2) lands already held by the Town which encompass significant natural resource features; and 3) those privately held lands within the study area which contain significant natural resource features but which have not been platted for residential development.[8] It should be noted with respect to The Nature Conservancy project area that, while the objective of the plan is the preservation of open space lands within that area, if The Nature Conservancy is unable to acquire the lands in question over time, actual development could reflect a different configuration of urban and open space preservation uses in this area.

The open space preservation area proposed under the maximum development plan encompasses about 604 acres, or about 33 percent of the study area. As shown on Map 20, the open space preservation area proposed under the maximum development plan would be somewhat disjointed, and would consist, in effect, of a series of isolated natural areas.

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[6]Platted in 1924, this subdivision remains undeveloped and unimproved except for certain lots adjacent to, or in the immediate vicinity of, Sheridan Road. The portion of this subdivision not included within the urban area proposed under the maximum development plan encompasses 97 lots. Assuming a 3 percent vacancy rate and an average household size of 3.0 persons per household, these lots could accommodate a population of 282 persons upon full development.

[7]The portion of The Nature Conservancy project area located east of 1st Avenue, south of 116th Street--which encompasses 10 platted lots, most of which have been significantly lost to shoreline erosion or developed in residential use--is not included in the proposed open space preservation area.

[8]Within the unplatted portion of the study area, the open space preservation area was identified through an application of the environmental corridor mapping technique described in Chapter II of this report. Within the unplatted areas, the proposed open space preservation area includes those wetlands, woodlands, prairies, and wildlife habitat areas which would ordinarily be included in an environmental corridor or isolated natural area.

Table 10

PROPOSED GENERALIZED LAND USE IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA UNDER THE MAXIMUM DEVELOPMENT PLAN

Generalized Land Use Category[a]	Subarea A		Subarea B		Subarea C		Subarea D		Subarea E		Total Study Area	
	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total
Urban Area.....	108	37.5	404	86.5	437	90.3	31	15.8	110	28.2	1,090	59.7
Open Space Preservation Area..	180	62.5	63	13.5	47	9.7	34	17.4	280	71.8	604	33.1
Rural Area.....	--	--	--	--	--	--	131	66.8	--	--	131	7.2
Total	288	100.0	467	100.0	484	100.0	196	100.0	390	100.0	1,825	100.0

[a] Includes street and railroad rights-of-way within the respective areas.

Source: SEWRPC.

Under the maximum development plan, rural areas, devoted primarily to agricultural use, would be confined to Subarea D in the southwestern portion of the study area and would encompass about 131 acres, or about 7 percent of the total study area.

Population and Housing

Assuming the development of virtually all remaining platted lots within the proposed urban area as individual home sites,[9] the housing stock in the study area would increase from 512 housing units in 1980 to 2,034 housing units upon full development--an increase of 1,522 housing units, or an almost four-fold increase in such units within the study area (see Table 11). Assuming a 3 percent housing vacancy rate and an average household size of 3.0 persons per household, the population of the study area could be expected to increase to about 5,922 persons under ultimate development conditions, an increase of 4,520 persons over the 1980 level (see Table 12).

Open Space Acquisition

A total of 213 acres, or about 35 percent of the open space preservation area proposed under the maximum development plan, are presently held by the Town of Pleasant Prairie, the University of Wisconsin, or The Nature Conservancy. As indicated in Table 13, the maximum development plan envisions that an additional 98 acres, or about 16 percent of the proposed open space preservation area, will be acquired in the public interest for preservation. The plan further envisions that about 243 acres, or about 40 percent of the proposed open space preservation area, will continue to be held in private ownership. Existing street and railway rights-of-way account for the balance--about 50 acres, or about 8 percent--of the proposed open space preservation area.

As shown on Map 21, open space lands proposed for acquisition under the maximum development plan would all be located within, or adjacent to, the presently defined project area of The Nature Conservancy. Based upon locally assessed property values, the cost of acquiring these lands, which include 177 platted lots and one unsubdivided parcel, would approximate $172,600.

Sanitary Sewer Service Area

The maximum development plan envisions that, during the next 20 years, public sanitary sewer service will be extended to all areas designated for urban use under the plan--areas which, as previously noted, encompass about 1,090 acres, or about 60 percent of the study area (see Map 20). The plan further envisions that, as sanitary sewers are installed to serve the identified urban areas, existing housing units within the open space preservation area which are proposed to be retained indefinitely will be connected to the sewerage system. Sanitary sewer service would not be extended to any other portions of the open space preservation area.

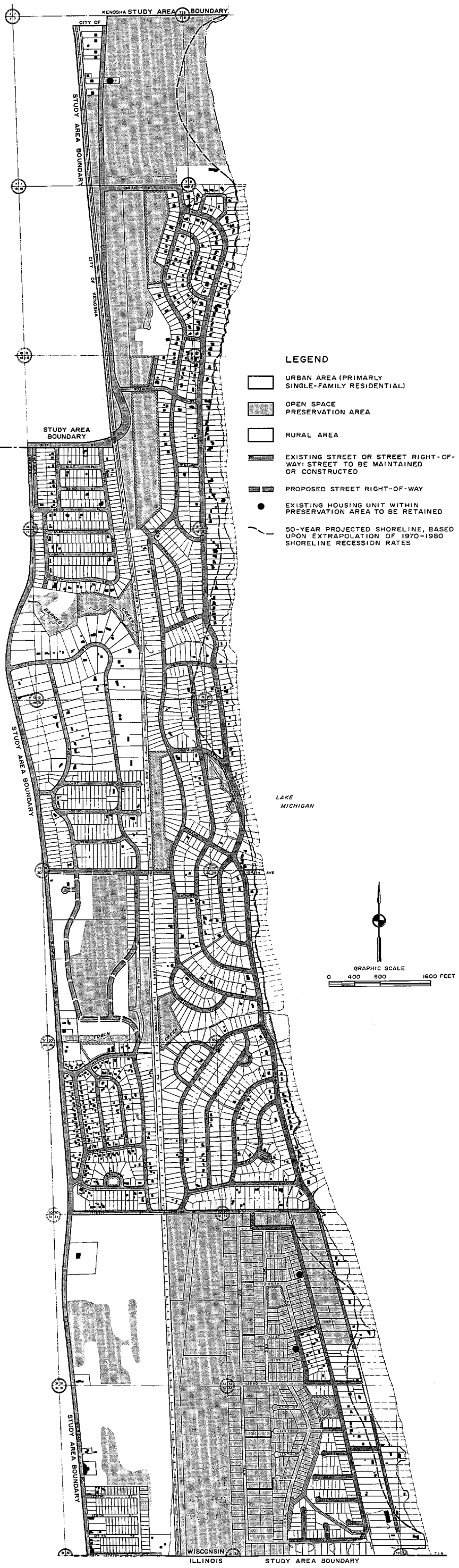
Public Infrastructure Costs

As noted above, the maximum development plan envisions that public sanitary sewer service will be provided within all of the proposed urban areas. The

[9]It was assumed that nine undeveloped lots adjacent to the Trident Marina would be developed in marina-related, rather than residential, use.

Map 20

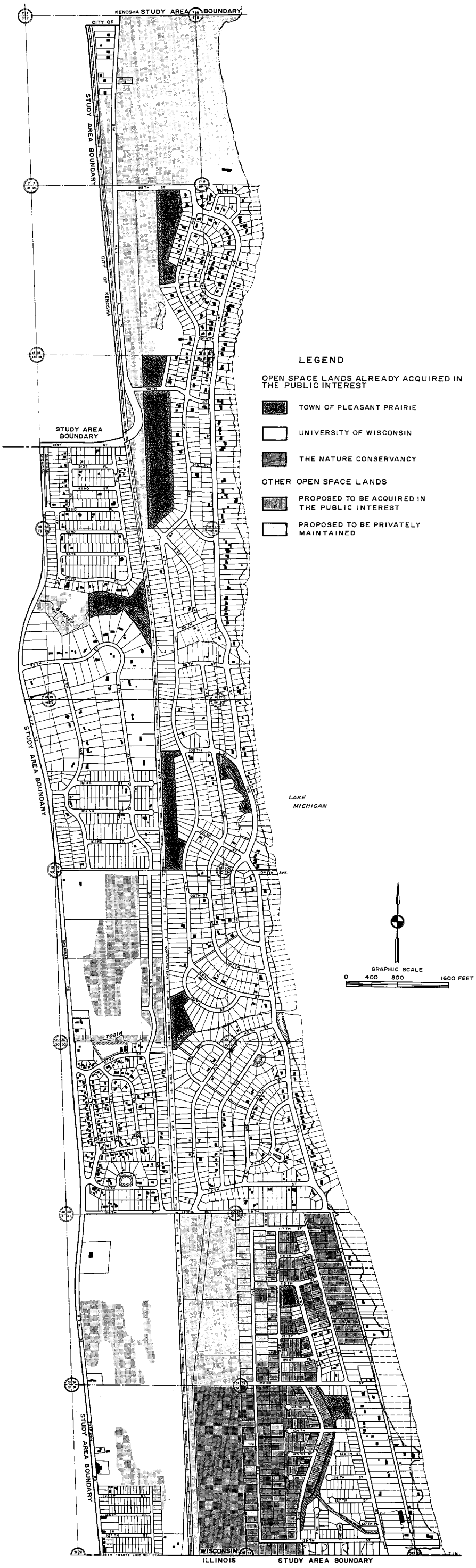
MAXIMUM DEVELOPMENT PLAN FOR THE CHIWAUKEE PRAIRIE-CAROL BEACH AREA OF THE TOWN OF PLEASANT PRAIRIE



Source: SEWRPC.

Map 21

PROPOSED OWNERSHIP OF LAND WITHIN THE OPEN SPACE PRESERVATION AREA UNDER THE MAXIMUM DEVELOPMENT PLAN



Source: SEWRPC.

Table 11

EXISTING HOUSING UNITS (1980) AND PROPOSED HOUSING UNITS UNDER THE MAXIMUM DEVELOPMENT PLAN FOR THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA

Subarea	Housing Units			
	Existing 1980	Upon Full Development	Change	
			Number	Percent
A	113	179	66	58.4
B	190	735	545	286.8
C	163	938	775	475.5
D	9	16	7	77.8
E	37	166	129	348.6
Total Study Area	512	2,034	1,522	297.3

Source: SEWRPC.

Table 12

EXISTING POPULATION (1980) AND PROPOSED POPULATION UNDER THE MAXIMUM DEVELOPMENT PLAN FOR THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA

Subarea	Housing Units			
	Existing 1980	Upon Full Development	Change	
			Number	Percent
A	324	522	198	61.1
B	607	2,139	1,532	252.4
C	377	2,730	2,353	624.1
D	27	48	21	77.8
E	67	483	416	620.9
Total Study Area	1,402	5,922	4,520	322.4

Source: U. S. Bureau of the Census and SEWRPC.

plan also envisions that public water supply service will be provided within all urban areas and that required street and stormwater drainage improvements will be made as the area develops. A rural street cross-section is envisioned; thus, local streets would be asphalt surface without curb and gutter, drainage being primarily through roadside ditches and open drainage channels.

As indicated in Table 14, the capital cost of public improvements envisioned under the maximum development plan would approximate $14.76 million. Construction of a sanitary sewerage system within the study area could be expected to cost $7.23 million. Construction of a water distribution system could be

Table 13

PROPOSED OWNERSHIP OF PROPERTY WITHIN THE OPEN SPACE PRESERVATION AREA UNDER THE MAXIMUM DEVELOPMENT PLAN

Proposed Ownership of Property Within Preservation Area	Subarea A		Subarea B		Subarea C		Subarea D		Subarea E		Total Study Area	
	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total
Property Presently Held in the Public Interest, Proposed to be Retained:												
Town of Pleasant Prairie....	14	7.8	8	12.7	36	76.6	--	--	9	3.2	67	11.1
University of Wisconsin.....	--	--	--	--	--	--	--	--	91	32.5	91	15.1
The Nature Conservancy.....	--	--	--	--	--	--	--	--	55	19.7	55	9.1
Subtotal	14	7.8	8	12.7	36	76.6	--	--	155	55.4	213	35.3
Existing Private Property, Proposed to be Acquired in the Public Interest.....	--	--	--	--	--	--	--	--	98	35.0	98	16.2
Existing Private Property, Proposed to be Retained.....	150	83.3	51	81.0	8	17.0	34	100.0	--[a]	--	243	40.2
Other Property: Existing Street and Railroad Rights-of-Way.....	16	8.9	4	6.3	3	6.4	--	--	27	9.6	50	8.3
Total Open Space Preservation Area	180	100.0	63	100.0	47	100.0	34	100.0	280	100.0	604	100.0

[a] Less than 0.5 acre.

Source: SEWRPC.

Table 14

COST OF PUBLIC IMPROVEMENTS UNDER THE MAXIMUM DEVELOPMENT PLAN

Subarea	Estimated Public Improvement Costs				
	Sanitary Sewer Collection System	Water Supply Distribution System	Local Street Improvements	Stormwater Drainage Improvements	Total
A	$1,065,000	$ 105,000	$ 5,000	$ 194,000	$ 1,369,000
B	2,171,000	2,165,000	298,000	469,000	5,103,000
C	3,267,000	2,192,000	483,000	601,000	6,543,000
D	29,000	179,000	21,000	20,000	249,000
E	694,000	457,000	213,000	131,000	1,495,000
Total	$7,226,000	$5,098,000	$1,020,000	$1,415,000	$14,759,000

Source: SEWRPC.

expected to cost $5.10 million. Construction or reconstruction of local streets within the study area could be expected to cost $1.02 million. Stormwater drainage improvements could be expected to cost $1.41 million.

MAXIMUM PRESERVATION PLAN

The maximum preservation plan envisions an extensive area devoted to open space preservation, including most of the areas of environmental significance remaining within the study area. In the identification of the areas to be preserved in essentially natural, open uses under this plan, a distinction was made between platted and unplatted lands. Within the unplatted portion of the study area, the open space preservation area was identified through an application of the environmental corridor mapping technique described in Chapter II of this report. Thus, within the unplatted areas, the proposed open space preservation area includes those wetlands, woodlands, prairies, wildlife habitat areas, and other natural features which would ordinarily be included within an environmental corridor or isolated natural area.

Within the platted portion of the study area, the proposed open space preservation area includes all wetlands and high-value upland prairie areas, excluding, however, those areas which are isolated or which encompass larger concentrations of housing units. Within the platted portions of the study area, upland areas classified as low- or medium-value prairie areas[10] were not included in the open space preservation area unless they encompassed other identifiable natural features or provided a link between identified wetlands or high-value upland prairies.

[10]Prairie value ratings reflect the diversity of prairie plants present, the integrity of the plant community, and the extent of human disturbance. Definitions of high-, medium-, and low-value prairies are presented in Chapter II of this report.

The proposed open space preservation area encompasses about 1,044 acres, or about 57 percent of the study area (see Table 15). As shown on Map 22, the proposed preservation area is essentially an elongated corridor connecting the Kenosha Sand Dunes on the north end of the study area with the Chiwaukee Prairie on the south end.

The maximum preservation plan anticipates the development of almost all the platted residential lots located outside the identified open space preservation area. The notable exception is the unimproved subdivision located in Subarea D, where the majority of the platted lots would remain in open space or rural uses. Like the maximum development plan, the maximum preservation plan envisions that certain unplatted lands will be converted to urban use. Specifically, certain unplatted lands adjacent to Sheridan Road in Subarea D would be converted to urban use, assuming that sanitary sewer service is eventually extended along Sheridan Road (STH 32) to the Wisconsin-Illinois border. In addition, certain unplatted lands east of Sheridan Road, south of 104th Street, would be converted to urban use, assuming the eventual extension of sanitary sewer service to adjacent platted areas.

The urban area proposed under the maximum preservation plan encompasses about 650 acres, or about 36 percent of the study area. As shown on Map 22, new urban development would occur primarily on the west side of the C&NW Railway right-of-way, although some additional development would occur east of that right-of-way, particularly in Subarea C.

Under the maximum preservation plan--as under the maximum development plan--a rural area, consisting primarily of agricultural land, would be located in the southwestern portion of the study area and would encompass about 131 acres, or about 7 percent of the total study area.

Population and Housing

Assuming the development of virtually all remaining platted lots within the proposed urban area as individual home sites,[11] the housing stock in the study area would increase from 512 housing units in 1980 to 989 housing units upon full development--an increase of 477 housing units, or about 93 percent (see Table 16). Assuming a 3 percent housing vacancy rate and an average household size of 3.0 persons per household, the population of the study area could be expected to increase to about 2,880 persons under ultimate development conditions, an increase of 1,478 persons over the 1980 level (see Table 17).

Open Space Acquisition

A total of 218 acres, or 21 percent of the open space preservation area proposed under the maximum preservation plan, is presently held by the Town of Pleasant Prairie, Kenosha County, the University of Wisconsin, and The Nature Conservancy. As indicated in Table 18, the maximum preservation plan envisions that an additional 444 acres, or about 42 percent of the open space preservation area, will be publicly or privately acquired for preservation. The plan further envisions that about 258 acres, or about 25 percent of the proposed

[11]It was assumed that nine undeveloped lots adjacent to the Trident Marina would be developed in marina-related, rather than residential, use.

Table 15

PROPOSED GENERALIZED LAND USE IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA UNDER THE MAXIMUM PRESERVATION PLAN

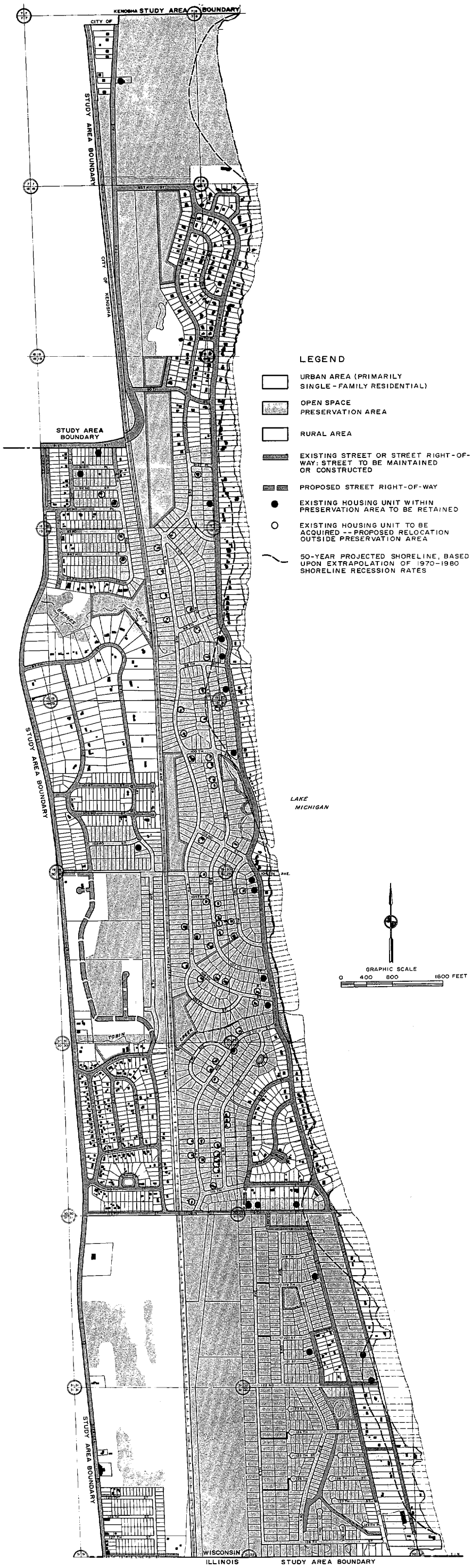
Generalized Land Use Category[a]	Subarea A		Subarea B		Subarea C		Subarea D		Subarea E		Total Study Area	
	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total
Urban Area.....	108	37.5	329	70.4	114	23.6	31	15.8	68	17.4	650	35.6
Open Space Preservation Area..	180	62.5	138	29.6	370	76.4	34	17.4	322	82.6	1,044	57.2
Rural Area.....	--	--	--	--	--	--	131	66.8	--	--	131	7.2
Total	288	100.0	467	100.0	484	100.0	196	100.0	390	100.0	1,825	100.0

[a] Includes street and railroad rights-of-way within the respective areas.

Source: SEWRPC.

Map 22

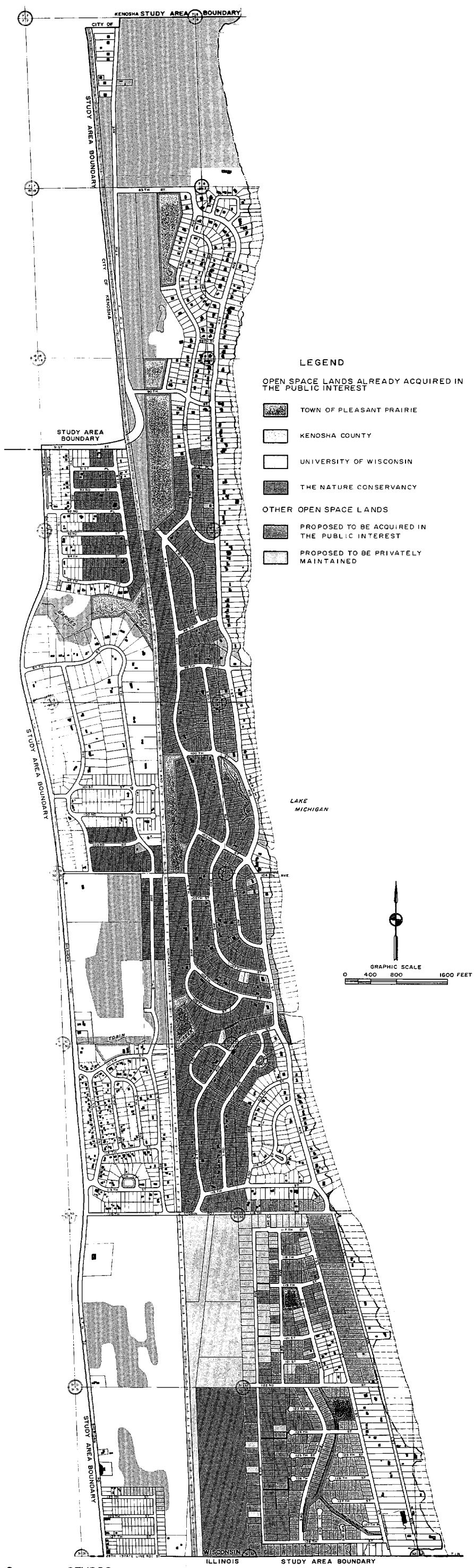
MAXIMUM PRESERVATION PLAN FOR THE CHIWAUKEE PRAIRIE-CAROL BEACH AREA OF THE TOWN OF PLEASANT PRAIRIE



Source: SEWRPC.

Map 23

PROPOSED OWNERSHIP OF LAND WITHIN THE OPEN SPACE PRESERVATION AREA UNDER THE MAXIMUM PRESERVATION PLAN



Source: SEWRPC.

Table 16

EXISTING HOUSING UNITS (1980) AND PROPOSED HOUSING UNITS UNDER THE MAXIMUM PRESERVATION PLAN FOR THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA

Subarea	Housing Units			
	Existing 1980	Upon Full Development	Change	
			Number	Percent
A	113	179	66	58.4
B	190	513	323	170.0
C	163	223	60	36.8
D	9	16	7	77.8
E	37	58	21	56.8
Total Study Area	512	989	477	93.2

Source: SEWRPC.

Table 17

EXISTING POPULATION (1980) AND PROPOSED POPULATION UNDER THE MAXIMUM PRESERVATION PLAN FOR THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA

Subarea	Population			
	Existing 1980	Upon Full Development	Change	
			Number	Percent
A	324	522	198	61.1
B	607	1,494	887	146.1
C	377	648	271	71.9
D	27	48	21	77.8
E	67	168	101	150.7
Total Study Area	1,402	2,880	1,478	105.4

Source: U. S. Bureau of the Census and SEWRPC.

open space preservation area, will continue to be held in private ownership. Existing street and railway rights-of-way account for the balance--about 124 acres, or about 12 percent--of the proposed open space preservation area.

The maximum preservation plan envisions that almost all privately held, unimproved platted lots within the proposed open space preservation area will be acquired for preservation in essentially natural, open use. Conversely, as shown on Map 23, portions of the proposed open space preservation area which have not been divided into residential lots would generally not be acquired. The only notable exception is the unsubdivided parcel of land east of the C&NW Railway right-of-way, south of 122nd Street, which is recommended for public or private acquisition because of its location within the presently defined project area of The Nature Conservancy.

Table 18

PROPOSED OWNERSHIP OF PROPERTY WITHIN THE OPEN SPACE PRESERVATION AREA UNDER THE MAXIMUM PRESERVATION PLAN

Proposed Ownership of Property Within Preservation Area	Subarea A		Subarea B		Subarea C		Subarea D		Subarea E		Total Study Area	
	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total
Property Presently Held in the Public Interest, Proposed to be Retained:												
Town of Pleasant Prairie....	14	7.8	8	5.8	38	10.3	--	--	10	3.1	70	6.7
Kenosha County.....	--	--	--	--	2	0.5	--	--	--	--	2	0.2
University of Wisconsin.....	--	--	--	--	--	--	--	--	91	28.3	91	8.7
The Nature Conservancy.....	--	--	--	--	--	--	--	--	55	17.1	55	5.3
Subtotal	14	7.8	8	5.8	40	10.8	--	--	156	48.5	218	20.9
Existing Private Property, Proposed to be Acquired in the Public Interest.....	--	--	52	37.7	259	70.0	--	--	133	41.3	444	42.5
Existing Private Property, Proposed to be Retained.....	150	83.3	55	39.8	18	4.9	34	100.0	1	0.3	258	24.7
Other Property: Existing Street and Railroad Rights-of-Way.....	16	8.9	23	16.7	53	14.3	--	--	32	9.9	124	11.9
Total Open Space Preservation Area	180	100.0	138	100.0	370	100.0	34	100.0	322	100.0	1,044	100.0

Source: SEWRPC.

Table 19

VALUE OF REAL PROPERTY TO BE ACQUIRED UNDER THE MAXIMUM PRESERVATION PLAN

Subarea	Real Property to be Acquired						
	Unimproved[a]		Improved[b]				Total Assessed Value
	Number of Lots	Assessed Value	Number of Lots	Assessed Value			
				Land	Improvements	Total	
A	--	$ --	--	$ --	$ --	$ --	$ --
B	222	367,400	6	49,200	195,500[d]	244,700	612,100
C	660	1,749,400	62	550,100	2,035,000[e]	2,585,100	4,334,500
D	--	--	--	--	--	--	--
E	290[c]	266,800	--	--	--	--	266,800
Total Study Area	1,172[c]	$2,383,600	68	$599,300	$2,230,500	$2,829,800	$5,213,400

[a] Property having no assessed improvement value.

[b] Property having an assessed improvement value.

[c] Includes one unsubdivided parcel.

[d] Includes four housing units.

[e] Includes 58 housing units.

Source: Kenosha County Assessor's Office and SEWRPC.

The maximum preservation plan also proposes that certain partially developed portions of the open space preservation area be restored, insofar as possible, to natural, open uses. In this regard, the plan envisions that a total of 62 housing units within the identified open space preservation area will be acquired and relocated outside that area and that the streets which presently provide access to the sites concerned will be vacated. Such relocation would enhance the natural values of the preservation area and eliminate the need to maintain, at a high public cost, access roads to sparsely developed areas. Any such relocation would occur over time and only with the voluntary cooperation of the property owners concerned.

As indicated in Table 19, the total assessed value of real property to be acquired under the maximum preservation plan is about $5.21 million. The unimproved land proposed for acquisition--consisting of a total of 1,171 platted lots and one unsubdivided parcel--has a combined assessed valuation of $2.38 million. The land value of the improved lots proposed for acquisition totals $599,300. The value of the improvements, including 62 housing units, totals $2.23 million. It is envisioned that an attempt will be made to sell these houses to a third party for relocation outside the study area. Experience indicates that only a nominal amount--typically no more than 5 percent of the original house acquisition cost--could be realized through such a sale. Thus, only about $112,000 of the original acquisition cost of $2.23 million could be expected to be recovered through resale of the houses.

Sanitary Sewer Service Area

The maximum preservation plan envisions that, during the next 20 years, public sanitary sewer service will be extended to all areas designated for urban use under the plan--areas which, as previously noted, encompass about 650 acres, or about 36 percent of the study area (see Map 22). The plan further envisions that, as sanitary sewers are installed to serve the identified urban areas, existing housing units within the open space preservation area which are proposed to be retained indefinitely will be connected to the sewerage system. Sanitary sewer service would not be extended to any other portions of the open space preservation area.

Infrastructure Costs

As noted above, the maximum preservation plan envisions that eventually public sanitary sewer service will be provided within all of the proposed urban areas. The plan also envisions that public water supply service will be provided within all urban areas and that required street and stormwater drainage improvements will be made as the area develops. A rural street cross-section is envisioned; thus, local streets would be asphalt surface without curb and gutter, drainage being primarily through roadside ditches.

As indicated in Table 20, the capital cost of public improvements envisioned under the maximum preservation plan would approximate $8.51 million. Construction of a sanitary sewerage system within the study area could be expected to cost $4.05 million. Construction of a water distribution system could be expected to cost $3.13 million. Construction or reconstruction of local streets within the study area could be expected to cost $383,000. Stormwater drainage improvements could be expected to cost $954,000.

DEVELOPMENT-PRESERVATION PLAN

The development-preservation plan represents a conscious attempt to accommodate significant additional urban development within the study area, while at the same time preserving the most important natural features of the area. The plan thus represents, in effect, a middle ground between the maximum development and maximum preservation plans, embodying some features of both.

The development-preservation plan emphasizes the preservation of those wetlands which are of special significance because of their effects on water quality and on streamflows within the study area, or because of the plant and animal life which they support. The plan places less emphasis upon the preservation of those wetlands with no identified special natural values. In order to establish a hierarchy among the wetlands in the study area, the development-preservation plan drew upon the findings of an analysis, described in Appendix A of this report, involving the application of the wetland "rezoning" criteria set forth in Chapter NR 115 of the Wisconsin Administrative Code to the study area wetlands. These criteria, along with a summary of the analysis findings, are set forth in Table 21. Wetlands determined to be significant in terms of the Chapter NR 115 rezoning criteria are identified on Map 24.

Table 20

COST OF PUBLIC IMPROVEMENTS UNDER THE MAXIMUM PRESERVATION PLAN

Subarea	Estimated Public Improvement Costs				
	Sanitary Sewer Collection System	Water Supply Distribution System	Local Street Improvements	Stormwater Drainage Improvements	Total
A	$ 732,000	$ 87,000	$ 5,000	$194,000	$1,018,000
B	1,801,000	1,784,000	178,000	341,000	4,104,000
C	1,067,000	798,000	65,000	268,000	2,198,000
D	29,000	179,000	21,000	20,000	249,000
E	417,000	283,000	114,000	131,000	945,000
Total	$4,046,000	$3,131,000	$383,000	$954,000	$8,514,000

Source: SEWRPC.

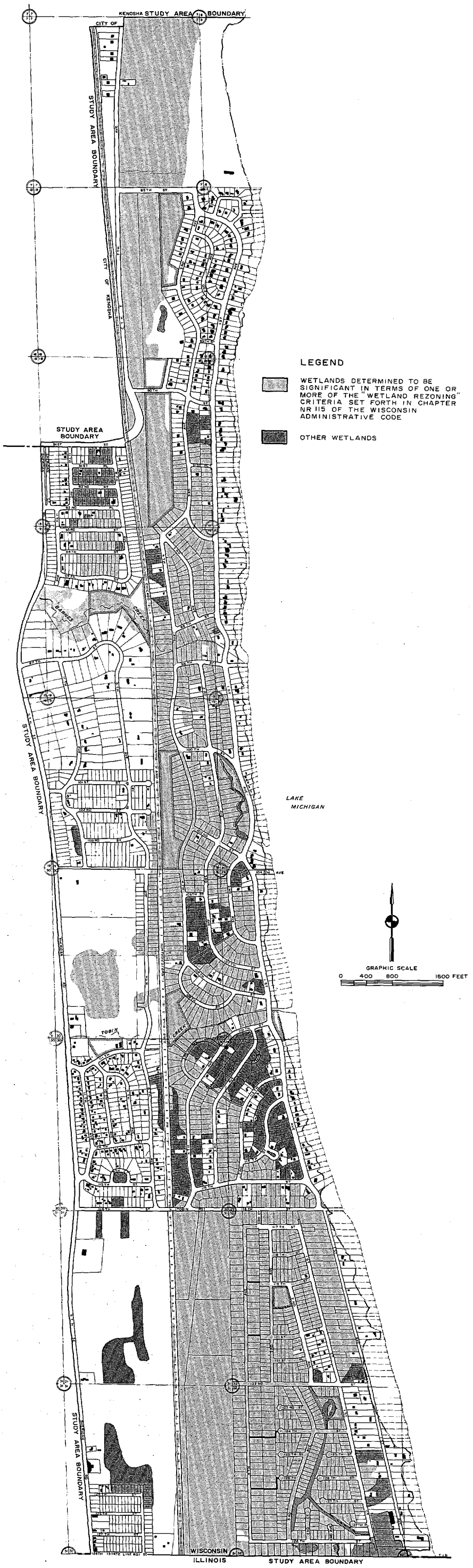
As indicated in Table 21, wetland areas encompassing about 160 acres, or about 20 percent of the study area wetlands, have been identified as particularly important to the maintenance of low streamflows, to the maintenance of water quality, and to the maintenance of the identified fish populations in the study area; wetland areas encompassing about 611 acres, or about 75 percent of the study area wetlands, have been identified as having wildlife habitat value; wetland areas encompassing about 540 acres, or about 66 percent of the study area wetlands, have been identified as having critical plant habitat value; wetland areas encompassing 62 acres, or about 8 percent of the study area wetlands, have been identified as fens; and wetland areas encompassing about 418 acres, or about 51 percent of the study area wetlands, have been identified as having natural area value. Many of these areas are overlapping and not mutually exclusive. It should be noted that of the 818 acres of wetlands within the study area, about 717 acres, or about 88 percent, have been identified as having at least one of the above-noted values.

In the identification of an open space preservation area under the development-preservation plan, a distinction was made between platted and unplatted areas. Within those portions of the study area which have been platted for residential development, the open space preservation area generally includes those wetlands which have been identified as having special significance because of their effects on water quality and streamflows, or because of the wildlife habitat areas, critical plant habitat areas, or areas of scientific value which they encompass. Certain wetlands for which special natural values have been identified were not included in the preservation area, however, inasmuch as they were isolated from similar areas or were located in areas of logical extension of the proposed urban area. Wetlands for which no special natural values have been identified were not included in the open space preservation area, except in those cases where such wetland areas were believed to significantly enhance the integrity of the preservation area.

Within the unplatted portion of the study area, the open space preservation area was identified through an application of the environmental corridor mapping technique described in Chapter II of this report. Thus, within the

Map 24

WETLANDS DETERMINED TO BE SIGNIFICANT IN TERMS OF THE WETLAND REZONING CRITERIA OF CHAPTER NR 115 OF THE WISCONSIN ADMINISTRATIVE CODE



Source: Wisconsin Department of Natural Resources and SEWRPC.

Table 21

SUMMARY OF THE FINDINGS OF THE ANALYSIS OF WETLANDS IN THE CHIWAUKEE PRAIRIE-CAROL BEACH AREA IN TERMS OF THE WETLAND REZONING CRITERIA OF CHAPTER NR 115 OF THE WISCONSIN ADMINISTRATIVE CODE

Criterion[a]	Findings
Storm- and floodwater storage capacity	No wetlands of significance were identified.
Maintenance of dry season streamflow, or the discharge of groundwater to a wetland, the recharge of groundwater from a wetland to another area, or the flow of groundwater through a wetland	The wetlands in the subbasins drained by Barnes Creek and Tobin Creek were identified as important to the maintenance of the flow of those streams under dry weather conditions. The wetland areas so identified encompass 160 acres, or 20 percent of all wetlands in the study area. In addition, several fen areas have been identified in the study area. A fen is a very rare type of wetland which is dominated by sedges and grasses growing on sandy peat soils and which generally develops in groundwater discharge areas. Fen areas encompass 62 acres, or 8 percent of all wetlands in the study area.
Filtering or storage of sediments, nutrients, heavy metals, or organic compounds that would otherwise drain into navigable waters	Wetlands in the subbasins drained by Barnes Creek and Tobin Creek were identified as having particularly important water quality benefits. The wetland areas so identified encompass 160 acres, or 20 percent of all wetlands in the study area.
Shoreline protection against soil erosion	No wetlands of significance were identified.
Fish spawning, breeding, nursery, or feeding grounds	Barnes Creek and Tobin Creek both support diverse and balanced forage fisheries. The wetlands identified as having an important bearing on water quality or low streamflows are considered to be important to the maintenance of the identified fish populations.
Wildlife habitat	Wetlands comprising significant wildlife habitat have been identified within the Kenosha Sand Dunes on the north end of the study area, within Chiwaukee Prairie on the south end, and within many of the intervening wetlands. These wetlands encompass 611 acres, or 75 percent of all wetlands in the study area.
Areas of special recreational, scenic, or scientific interest, including scarce wetland types	Areas of special scientific interest include critical plant habitat areas where rare, threatened, or endangered species in Wisconsin have been identified; and natural areas containing intact plant community assemblages which closely resemble the pre-European settlement landscape. Wetlands identified as critical plant habitat areas encompass 540 acres, or 66 percent of all wetlands in the study area. Wetlands identified as natural areas encompass 418 acres, or 51 percent of all wetlands in the study area. In addition, a total of nine archaeological sites, consisting of early American Indian campsites and villages, have been identified within the study area, five of these being partially or entirely located within wetland areas.

[a] Section NR 115.05(2)(e)4 of the Wisconsin Administrative Code.

Source: Wisconsin Department of Natural Resources and SEWRPC.

unplatted areas, the proposed open space preservation area includes those wetlands, woodlands, prairies, wildlife habitat areas, and other natural features which would ordinarily be included within an environmental corridor or isolated natural area.

The open space preservation area proposed under the development-preservation plan is shown on Map 25. This area encompasses about 853 acres, or about 47 percent of the total study area (see Table 22). The open space preservation area consists essentially of a continuous corridor--somewhat narrower than the corridor proposed under the maximum preservation plan--connecting the Kenosha Sand Dunes on the north end of the study area with the Chiwaukee Prairie on the south end. The maintenance of at least a narrow corridor is considered important to the movement of plant seeds and wildlife throughout the study area.

The development-preservation plan envisions the development of most of the platted residential lots outside the identified open space preservation area. The notable exception is the unimproved subdivision located in Subarea D, where the majority of the platted lots would remain undeveloped. Like the two previously described plans, the development-preservation plan anticipates the eventual development of certain presently unplatted lands. Specifically, certain unplatted lands adjacent to Sheridan Road (STH 32) in Subarea D would be converted to urban use, assuming that sanitary sewer service is eventually extended along Sheridan Road to the Wisconsin-Illinois border. In addition, certain unplatted lands east of Sheridan Road, south of 104th Street, would be converted to urban use, assuming the eventual extension of sanitary sewer service to adjacent platted areas. The proposed urban area shown on Map 25 encompasses about 841 acres, or about 46 percent of the study area.

Population and Housing

Assuming the development of virtually all remaining platted lots within the planned urban area as individual home sites,[12] the housing stock in the study area would increase from 512 housing units in 1980 to 1,479 housing units upon full development--an increase of 967 housing units, or about triple the 1980 level (see Table 23). Assuming a 3 percent housing vacancy rate and an average household size of 3.0 persons per household, the population of the study area could be expected to increase to about 4,305 persons, an increase of 2,903 persons over the 1980 level (see Table 24).

Open Space Acquisition

A total of 217 acres, or 25 percent of the open space preservation area proposed under the development-preservation plan, is presently held by the Town of Pleasant Prairie, Kenosha County, the University of Wisconsin, and The Nature Conservancy. As indicated in Table 25, the development-preservation plan envisions that an additional 295 acres, or about 35 percent of the proposed open space preservation area, will be publicly or privately acquired. The plan further envisions that about 254 acres, or about 30 percent of the open space preservation area, will continue to be held in private ownership. Existing street and railway rights-of-way account for the balance--about 87 acres, or about 10 percent--of the proposed open space preservation area.

[12]It was assumed that nine undeveloped lots adjacent to the Trident Marina would be developed in marina-related, rather than residential, use.

Table 22

PROPOSED GENERALIZED LAND USE IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA UNDER THE DEVELOPMENT-PRESERVATION PLAN

Generalized Land Use Category[a]	Subarea A		Subarea B		Subarea C		Subarea D		Subarea E		Total Study Area	
	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total
Urban Area.....	108	37.5	386	82.7	245	50.6	31	15.8	71	18.2	841	46.1
Open Space Preservation Area..	180	62.5	81	17.3	239	49.4	34	17.4	319	81.8	853	46.7
Rural Area.....	--	--	--	--	--	--	131	66.8	--	--	131	7.2
Total	288	100.0	467	100.0	484	100.0	196	100.0	390	100.0	1,825	100.0

[a] Includes street and railroad rights-of-way within the respective areas.

Source: SEWRPC.

Table 23

EXISTING HOUSING UNITS (1980) AND PROPOSED HOUSING UNITS UNDER THE DEVELOPMENT-PRESERVATION PLAN FOR THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA

Subarea	Housing Units			
	Existing 1980	Upon Full Development	Change	
			Number	Percent
A	113	179	66	58.4
B	190	698	508	267.4
C	163	524	361	221.5
D	9	16	7	77.8
E	37	62	25	67.6
Total Study Area	512	1,479	967	188.9

Source: SEWRPC.

Table 24

EXISTING POPULATION (1980) AND PROPOSED POPULATION UNDER THE DEVELOPMENT-PRESERVATION PLAN FOR THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA

Subarea	Population			
	Existing 1980	Upon Full Development	Change	
			Number	Percent
A	324	522	198	61.1
B	607	2,031	1,424	234.6
C	377	1,524	1,147	304.2
D	27	48	21	77.8
E	67	180	113	168.7
Total Study Area	1,402	4,305	2,903	207.1

Source: U. S. Bureau of the Census and SEWRPC.

The development-preservation plan envisions that almost all privately held, unimproved platted lots within the proposed open space preservation area will be publicly or privately acquired for preservation. Conversely, portions of the proposed open space preservation area which have not been divided into residential lots would generally not be acquired (see Map 26). The only notable exception is the unsubdivided parcel of land located east of the C&NW Railway right-of-way, south of 122nd Street, which is proposed for acquisition because of its location within the presently defined project area of The Nature Conservancy.

The development-preservation plan also envisions that certain partially developed portions of the open space preservation area will be eventually restored, insofar as possible, to natural, open uses. In this regard, the plan envisions that 14 housing units within the identified open space preservation area will

Table 25

PROPOSED OWNERSHIP OF PROPERTY WITHIN THE OPEN SPACE PRESERVATION AREA UNDER THE DEVELOPMENT-PRESERVATION PLAN

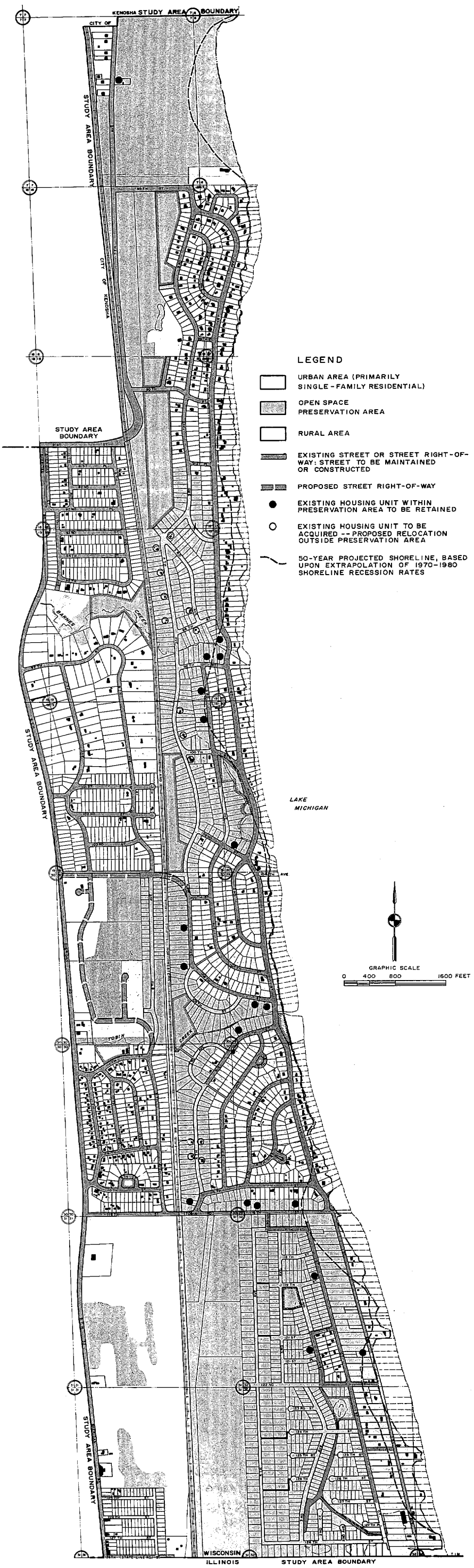
Proposed Ownership of Property Within Preservation Area	Subarea A		Subarea B		Subarea C		Subarea D		Subarea E		Total Study Area	
	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total
Property Presently Held in the Public Interest, Proposed to be Retained:												
Town of Pleasant Prairie....	14	7.8	8	9.9	38	15.9	--	--	10	3.1	70	8.2
Kenosha County.....	--	--	--	--	1	0.4	--	--	--	--	1	0.1
University of Wisconsin.....	--	--	--	--	--	--	--	--	91	28.5	91	10.7
The Nature Conservancy.....	--	--	--	--	--	--	--	--	55	17.3	55	6.4
Subtotal	14	7.8	8	9.9	39	16.3	--	--	156	48.9	217	25.4
Existing Private Property, Proposed to be Acquired in the Public Interest.....	--	--	8	9.9	156	65.3	--	--	131	41.1	295	34.6
Existing Private Property, Proposed to be Retained.....	150	83.3	54	66.6	16	6.7	34	100.0	--[a]	--	254	29.8
Other Property: Existing Street and Railroad Rights-of-Way.....	16	8.9	11	13.6	28	11.7	--	--	32	10.0	87	10.2
Total Open Space Preservation Area	180	100.0	81	100.0	239	100.0	34	100.0	319	100.0	853	100.0

[a] Less than 0.5 acre.

Source: SEWRPC.

Map 25

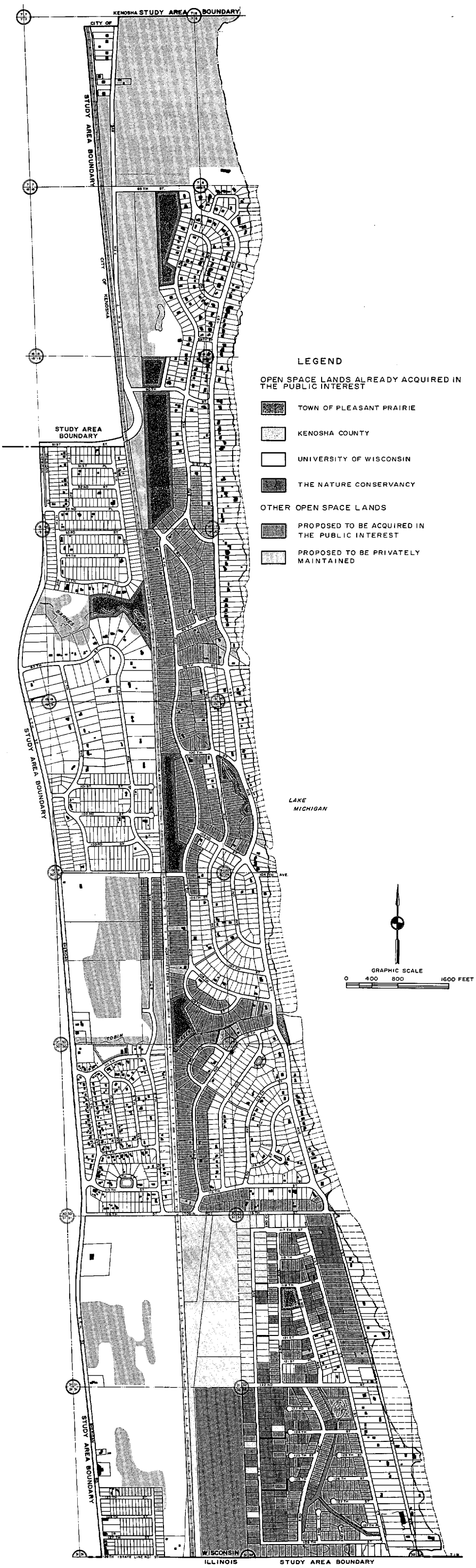
DEVELOPMENT-PRESERVATION PLAN FOR THE CHIWAUKEE PRAIRIE-CAROL BEACH AREA OF THE TOWN OF PLEASANT PRAIRIE



Source: SEWRPC.

Map 26

PROPOSED OWNERSHIP OF LAND WITHIN THE OPEN SPACE PRESERVATION AREA UNDER THE DEVELOPMENT-PRESERVATION PLAN



Source: SEWRPC.

be acquired and relocated outside that area and that the streets which presently provide access to the sites concerned will be vacated. Such relocation would enhance the natural values of the preservation area and eliminate the need to maintain access roads to sparsely developed areas. Existing occupants would have the option to remain in their present location as long as they desire. Any acquisition of property for the purpose of relocation would occur only with the voluntary cooperation of the property owners concerned.

As indicated in Table 26, the total assessed value of real property to be acquired under the development-preservation plan is $1.84 million. The unimproved land proposed for acquisition--consisting of 723 platted lots and one unsubdivided parcel--has a combined assessed value of $1.24 million. The land value of improved lots proposed for acquisition totals $143,900. The value of improvements, including 14 housing units, proposed for acquisition totals $453,000. It is envisioned that an attempt will be made to sell these houses to a third party for relocation outside the study area. It is estimated that $23,000--5 percent of the original acquisition cost--would be realized through the resale of these houses.

Sanitary Sewer Service Area

The development-preservation plan envisions that, during the next 20 years, public sanitary sewer service will be extended to all areas designated for urban use under the plan--areas which, as previously noted, encompass about 841 acres, or about 46 percent of the study area (see Map 25). The plan further envisions that, as sanitary sewers are installed to serve the identified urban areas, existing housing units within the open space preservation area which are proposed to be retained indefinitely will be connected to the sewerage system. Sanitary sewer service would not be extended to any other portions of the open space preservation area.

Public Infrastructure Costs

As noted above, the development-preservation plan envisions that public sanitary sewer service will be provided within all of the proposed urban areas. The plan also envisions that public water supply service will be provided within all urban areas and that required street and stormwater drainage improvements will be made as the area develops. A rural street cross-section is envisioned; thus, local streets would be asphalt surface without curb and gutter, drainage being primarily through roadside ditches and open drainage channels.

As indicated in Table 27, the capital cost of public improvements under the development-preservation plan may be expected to total $11.65 million. Of this total, the construction of sanitary sewerage facilities within the study area may be expected to cost $5.65 million; the construction of a water distribution system $4.02 million; the construction or reconstruction of local streets $686,000; and the construction of stormwater drainage improvements $1.29 million.

COMPARISON OF ALTERNATIVE PLANS

The previous sections of this chapter have described three alternative land use management plans for the Chiwaukee Prairie-Carol Beach area. This section compares the major features of those three plans, including the amounts of land

Table 26

VALUE OF REAL PROPERTY TO BE ACQUIRED UNDER THE DEVELOPMENT-PRESERVATION PLAN

Subarea	Real Property to be Acquired						
	Unimproved[a]		Improved[b]				Total Assessed Value
	Number of Lots	Assessed Value	Number of Lots	Assessed Value			
				Land	Improvements	Total	
A	--	$ --	--	$ --	$ --	$ --	$ --
B	40	32,700	--	--	--	--	32,700
C	398	957,600	15	143,900	453,000[d]	596,900	1,554,500
D	--	--	--	--	--	--	--
E	286[c]	247,800	--	--	--	--	247,800
Total Study Area	724[c]	$1,238,100	15	$143,900	$453,000	$596,900	$1,835,000

[a] Property having no assessed improvement value.

[b] Property having an assessed improvement value.

[c] Includes one unsubdivided parcel.

[d] Includes 14 housing units.

Source: Kenosha County Assessor's Office and SEWRPC.

Table 27

COST OF PUBLIC IMPROVEMENTS UNDER THE DEVELOPMENT-PRESERVATION PLAN

Subarea	Estimated Public Improvement Costs				
	Sanitary Sewer Collection System	Water Supply Distribution System	Local Street Improvements	Stormwater Drainage Improvements	Total
A	$ 947,000	$ 87,000	$ 5,000	$ 194,000	$1,233,000
B	2,086,000	2,083,000	262,000	469,000	4,900,000
C	2,164,000	1,389,000	284,000	480,000	4,317,000
D	29,000	179,000	21,000	20,000	249,000
E	421,000	285,000	114,000	131,000	951,000
Total	$5,647,000	$4,023,000	$686,000	$1,294,000	$11,650,000

Source: SEWRPC.

proposed to be allocated to urban, open space preservation, and rural uses; the attendant housing unit and population levels; the attendant public improvement costs; and the proposed open space preservation measures and attendant costs.

Land Use

Table 28 compares the amount of land proposed to be allocated to urban, open space preservation, and rural areas under the three alternative plans under ultimate development conditions. As indicated in this table, the maximum

Table 28

GENERALIZED LAND USE IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA UNDER THE ALTERNATIVE LAND USE MANAGEMENT PLANS FOR ULTIMATE DEVELOPMENT CONDITIONS

Plan Alternative	Urban Area		Open Space Preservation Area		Rural Area		Total Area	
	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total
Maximum Development....	1,090	59.7	604	33.1	131	7.2	1,825	100.0
Maximum Preservation...	650	35.6	1,044	57.2	131	7.2	1,825	100.0
Development-Preservation...	841	46.1	853	46.7	131	7.2	1,825	100.0

Source: SEWRPC.

development plan envisions the most extensive urban area of the alternative plans. Under the maximum development plan, 60 percent of the study area would be devoted to urban uses, in comparison with 36 percent under the maximum preservation plan and 46 percent under the development-preservation plan. Conversely, the maximum preservation plan envisions the most extensive preservation of open space of the alternative plans. The maximum preservation plan envisions an open space preservation area encompassing 57 percent of the study area, in comparison with 33 percent under the maximum development plan and 47 percent under the development-preservation plan. The maximum development, maximum preservation, and development-preservation plans each envision that rural areas would encompass about 7 percent of the study area.

Housing Units and Population

Table 29 indicates change in the number of housing units anticipated in the study area under the three ultimate development plans. Under the maximum development plan, housing units in the study area would increase from 512 in 1980 to about 2,034 under full development conditions, about a four-fold increase. Under the maximum preservation plan, the housing stock would increase to about 989 housing units upon full development, almost double the 1980 level. Under the development-preservation plan, the housing stock would increase to about 1,479 housing units upon full development, almost triple the 1980 level.

As indicated in Table 30, the maximum development plan envisions a population of about 5,922 persons under full development conditions, an increase of 4,520 over the 1980 population of 1,402. The maximum preservation plan envisions a population of about 2,880 under full development conditions, an increase of 1,478 over the 1980 level. The development-preservation plan envisions a population of about 4,305 under full development conditions, an increase of 2,903 persons over the 1980 level.

Public Improvements

The maximum development, maximum preservation, and development-preservation plans envision urban areas encompassing 1,090 acres, 650 acres, and 841 acres, respectively. Each of these plans envisions that public sanitary sewer and

Table 29

EXISTING HOUSING UNITS (1980) AND PROPOSED HOUSING UNITS UNDER THE ALTERNATIVE LAND USE MANAGEMENT PLANS FOR ULTIMATE DEVELOPMENT CONDITIONS

Plan Alternative	Housing Units			
	Existing 1980	Upon Full Development	Change	
			Number	Percent
Maximum Development.....	512	2,034	1,522	297.3
Maximum Preservation.....	512	989	477	93.2
Development-Preservation.....	512	1,479	967	188.9

Source: SEWRPC.

Table 30

EXISTING POPULATION (1980) AND PROPOSED POPULATION UNDER THE ALTERNATIVE LAND USE MANAGEMENT PLANS FOR ULTIMATE DEVELOPMENT CONDITIONS

Plan Alternative	Population			
	Existing 1980	Upon Full Development	Change	
			Number	Percent
Maximum Development.....	1,402	5,922	4,520	322.4
Maximum Preservation.....	1,402	2,880	1,478	105.4
Development-Preservation.....	1,402	4,305	2,903	207.1

Source: U. S. Bureau of the Census and SEWRPC.

water supply service will be eventually extended to all of the proposed urban areas. The plans also envision that required street improvements and improvements to the stormwater drainage system will be undertaken as the area develops. In this regard, the plans envision a rural street cross-section, consisting of asphalt surface streets without curb and gutter.

Table 31 sets forth the costs of public improvements envisioned under the maximum development, maximum preservation, and development-preservation plans. As indicated in this table, the total cost of public improvements--including the construction of a sanitary sewer collection system, the construction of a water supply distribution system, the construction or reconstruction of local streets, and stormwater drainage improvements--is estimated at $14.8 million under the maximum development plan, $8.5 million under the maximum preservation plan, and $11.7 million under the development-preservation plan.

The average costs of public improvements per housing unit under the alternative plans are set forth in Table 32. As indicated in this table, public

Table 31

COST OF PUBLIC IMPROVEMENTS UNDER THE ALTERNATIVE LAND USE MANAGEMENT PLANS

Plan Alternative	Estimated Public Improvement Costs				
	Sanitary Sewer Collection System	Water Supply Distribution System	Local Street Improvements	Stormwater Drainage Improvements	Total
Maximum Development....	$7,226,000	$5,098,000	$1,020,000	$1,415,000	$14,759,000
Maximum Preservation...	4,046,000	3,131,000	383,000	954,000	8,514,000
Development-Preservation...	5,647,000	4,023,000	686,000	1,294,000	11,650,000

Source: SEWRPC.

Table 32

COST OF PUBLIC IMPROVEMENTS PER HOUSING UNIT UNDER THE ALTERNATIVE LAND USE MANAGEMENT PLANS

Plan Alternative	Estimated Public Improvement Costs per Housing Unit				
	Sanitary Sewer Collection System[a]	Water Supply Distribution System[b]	Local Street Improvements[a]	Stormwater Drainage Improvements[a]	Total
Maximum Development....	$3,553	$2,736	$501	$696	$7,486
Maximum Preservation...	4,091	3,828	387	965	9,271
Development-Preservation...	3,818	3,076	464	875	8,233

[a] Calculated by dividing the improvement costs set forth in Table 31 by the total number of housing units anticipated under ultimate development conditions under the respective plans.

[b] Calculated by dividing the cost of the water distribution system under the respective plans as set forth in Table 31 by the total number of housing units anticipated under ultimate development conditions, excluding those existing and proposed housing units within the portion of the study area already being provided with public water supply service.

Source: SEWRPC.

improvement costs are estimated at $7,486 per housing unit under the maximum development plan; $9,271 per housing unit under the maximum preservation plan; and $8,233 per housing unit under the development-preservation plan.

Open Space Preservation

The open space preservation proposals of the alternative plans differ significantly, both in terms of the amount and location of lands to be preserved and in terms of the level of supporting public or private outlay required for the acquisition of property.

Table 33

VALUE OF REAL PROPERTY TO BE ACQUIRED UNDER THE ALTERNATIVE LAND USE MANAGEMENT PLANS

Plan Alternative	Real Property to be Acquired						
	Unimproved[a]		Improved[b]				Total Assessed Value
	Number of Lots	Assessed Value	Number of Lots	Assessed Value			
				Land	Improvements	Total	
Maximum Development....	178[c]	$ 172,600	--	$ --	$ --	$ --	$ 172,600
Maximum Preservation...	1,172[c]	2,383,600	68	599,300	2,230,500[d]	2,829,800	5,213,400
Development-Preservation...	724[c]	1,238,100	15	143,900	453,000[e]	596,900	1,835,000

[a] Property having no assessed improvement value.

[b] Property having an assessed improvement value.

[c] Includes one unsubdivided parcel.

[d] Includes 62 housing units.

[e] Includes 14 housing units.

Source: Kenosha County Assessor's Office and SEWRPC.

The maximum preservation plan envisions an open space preservation area encompassing 1,044 acres, or 57 percent of the study area. The plan envisions that 444 acres, or 43 percent of this area, will be publicly or privately acquired for preservation. As indicated in Table 33, open space acquisition costs under the maximum preservation plan would total $5.21 million. This total includes $2.38 million for the acquisition of unimproved property and $2.83 million for the acquisition of improved property. The plan envisions that 62 housing units will be acquired and relocated outside the proposed open space preservation area, thereby restoring natural conditions within the area insofar as possible and eliminating the need to maintain access roads to sparsely developed areas.

The development-preservation plan envisions an open space preservation area encompassing 853 acres, or 47 percent of the total study area. This plan envisions that 295 acres, or 35 percent of the proposed open space area, will be publicly or privately acquired for preservation. As indicated in Table 33, property acquisition costs under the development-preservation plan would total about $1.84 million, including $1.24 million for unimproved and $596,900 for improved property. The development-preservation plan envisions that 14 housing units will be acquired and relocated outside the proposed open space preservation area.

The maximum development plan envisions an open space preservation area encompassing 604 acres, or 33 percent of the study area. The plan envisions that 98 acres, or 16 percent of the proposed open space preservation area--consisting of privately held land within or immediately adjacent to the presently defined project area of The Nature Conservancy--will be acquired in the public interest at an estimated cost of $172,600 (see Table 33).

A comparison of the open space preservation proposals of the three alternative plans should consider the degree to which the plans may be expected to preserve key elements of the natural resource base. Of primary importance is the preservation of those wetlands which have been identified as being particularly significant because of their effects on water quality and streamflows, or because of the wildlife habitat areas, critical plant habitat areas, or areas of scientific value which they encompass.[13] Table 34 compares the degree to which the alternative plans would preserve these wetlands and related upland areas.

As indicated in Table 34, the maximum preservation plan would result in the highest level of preservation of the identified natural resource base elements. The development-preservation plan would result in a slightly lower, but still substantial, degree of preservation. The maximum development plan would result in a significantly lower degree of preservation of many of the identified natural resource base elements.

Finally, it should be noted that the maximum preservation plan and the development-preservation plan envision the maintenance of an open space corridor linking the Kenosha Sand Dunes at the north end of the study area with the Chiwaukee Prairie at the south end. As already noted, such a continuous corridor is considered to be important to the movement of plant seeds and wildlife within the area. In contrast, the open space preservation areas envisioned under the maximum development plan are relatively disjointed, consisting, in essence, of a series of isolated natural areas.

PROPERTY TAX IMPACTS

Each of the three alternative plans described in this chapter envisions the acquisition of real property within the proposed open space preservation areas. Such acquisition would likely take place over an extended period of time on a voluntary basis as each particular parcel comes onto the real estate market. The eventual acquisition of those properties by a unit of government would result in a direct reduction in the property tax base. Accordingly, impacts on the property tax base should be considered in the comparison and evaluation of the alternative plans.

Property tax data for 1983 for the four taxing jurisdictions in the Chiwaukee Prairie-Carol Beach area--the Town of Pleasant Prairie, the Kenosha Unified School District, Kenosha County, and the Gateway Technical Institute District--are set forth in Table 35. Tables 36, 37, and 38 indicate the estimated impact of the maximum preservation, development-preservation, and maximum development plans, respectively, on the property tax bases and gross property tax rates of each of these four taxing jurisdictions. Table 39 summarizes the impact of the lost tax base under each of the three alternative plans as reflected in the assumed increase in the annual property tax on a $50,000 home.

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[13]These wetlands were identified in the analysis, described in Appendix A of this report, involving the application of the wetland rezoning criteria set forth in Chapter NR 115 of the Wisconsin Administrative Code to the study area wetlands. Those criteria, along with a summary of the analysis findings, are set forth in Table 21.

Table 34

PRESERVATION OF SELECTED NATURAL RESOURCE ELEMENTS UNDER THE ALTERNATIVE LAND USE MANAGEMENT PLANS

Natural Resource Element[a]	Percent of Natural Resource Element Preserved Under the Alternative Land Use Management Plans		
	Maximum Development	Maximum Preservation	Development-Preservation
Wetland Areas			
Total Wetlands (818 acres in study area)	58	95	83
Wetlands Particularly Important to the Maintenance of Water Quality Low Stream Flows, and Identified Fish Populations (160 acres in study area)	27	99	85
Wetlands Comprising Critical Plant Habitat (540 acres in study area)	77	99	91
Wetlands Comprising Wildlife Habitat (611 acres in study area)	73	99	97
Wetlands Having Natural Area Value (418 acres in study area)	81	100	96
Wetland Fen Area (62 acres in study area)	65	100	92
Wetlands Having at Least One of the Above-Listed Values (717 acres in study area)	63	98	90
Upland Areas			
Upland Area Comprising Critical Plant Habitat (68 acres in study area)	75	87	79
Upland Area Comprising Wildlife Habitat (87 acres in study area)	78	85	84
Upland Area Having Natural Area Value (56 acres in study area)	86	91	89
Upland Woodlands (24 acres in study area)	79	79	79

[a] Many of these elements are overlapping and not mutually exclusive.

Source: SEWRPC.

Under the maximum preservation plan, real property having a combined assessed value of about $5.21 million would be acquired. This represents 1.58 percent of the current equalized value of the Town of Pleasant Prairie, 0.27 percent of the equalized value of the Kenosha Unified School District, 0.19 percent of the equalized value of Kenosha County, and 0.06 percent of the equalized value of the Gateway Technical Institute District. If the open space acquisition proposals of the maximum preservation plan were to be fully implemented, a property owner with a $50,000 home in the Town of Pleasant Prairie would pay $3.20 more in local property taxes because of the loss of the tax base, given the 1983 tax levies of the four taxing jurisdictions. Similarly, a property owner in the Kenosha Unified School District but outside the Town of Pleasant Prairie with a $50,000 home would pay $2.03 more; in Kenosha County outside the Kenosha Unified School District, $0.40 more; and in the Racine and Walworth County portions of the Gateway Technical Institute District, $0.03 more.

Table 35

EQUALIZED VALUE OF PROPERTY AND PROPERTY TAX RATES FOR THE TOWN OF PLEASANT PRAIRIE, KENOSHA COUNTY, THE KENOSHA UNIFIED SCHOOL DISTRICT, AND THE GATEWAY TECHNICAL INSTITUTE DISTRICT: 1983

Taxing Jurisdiction	Equalized Value of Property (real and personal)	Property Tax Levy	Gross Property Tax Rate (dollars of tax per $1,000 equalized value)[a]	Gross Tax on $50,000 House
Town of Pleasant Prairie.....	$ 329,660,720	$ 479,510	1.4546	$ 72.73
Kenosha County.....	2,807,783,110[b]	11,076,835	3.9450	197.25
Kenosha Unified School District.....	1,961,586,510[b]	23,941,811	12.2053	610.27
Gateway Technical District.....	9,477,083,425[b]	11,678,789	1.2323	61.62

[a]The gross tax rate was calculated as the property tax levy divided by the equalized value of property. State property tax relief is not reflected in this rate.

[b]Excludes tax incremental finance district value increment.

Source: SEWRPC.

Table 36

HYPOTHETICAL EQUALIZED VALUE OF PROPERTY AND PROPERTY TAX RATES FOR 1983 ASSUMING OPEN SPACE ACQUISITION AS PROPOSED IN THE MAXIMUM PRESERVATION PLAN

Taxing Jurisdiction	Equalized Value of Property Less Value of Property to be Acquired[a]	Property Tax Levy	Gross Property Tax Rate (dollars of tax per $1,000 equalized value)b	Gross Tax on $50,000 House	Increase in Tax on $50,000 Home as a Result of Open Space Acquisition	
					Absolute	Percent
Town of Pleasant Prairie...	$ 324,447,320	$ 479,510	1.4779	$ 73.90	$1.17	1.6
Kenosha County.....	2,802,569,710	11,076,835	3.9524	197.62	0.37	0.2
Kenosha Unified School District....	1,956,373,110	23,941,811	12.2379	611.90	1.63	0.3
Gateway Technical District.....	9,471,870,025	11,678,789	1.2330	61.65	0.03	--[c]

[a]The value of property to be acquired under the maximum preservation plan is $5,213,400.

[b]This rate was calculated by dividing the property tax levy by the equalized value of property less the value of property to be acquired. Property tax relief is not reflected in this rate.

[c]Less than 0.1 percent.

Source: SEWRPC.

Under the development-preservation plan, real property having a combined assessed value of about $1.84 million would be acquired. This represents 0.56 percent of the current equalized value of the Town of Pleasant Prairie, 0.09 percent of the equalized value of the Kenosha Unified School District, 0.07 percent of the equalized value of Kenosha County, and 0.02 percent of the equalized value of the Gateway Technical Institute District. If the open space acquisition proposals of the development-preservation plan were to be fully

Table 37

HYPOTHETICAL EQUALIZED VALUE OF PROPERTY AND PROPERTY TAX RATES FOR 1983 ASSUMING OPEN SPACE ACQUISITION AS PROPOSED IN THE DEVELOPMENT-PRESERVATION PLAN

Taxing Jurisdiction	Equalized Value of Property Less Value of Property to be Acquired[a]	Property Tax Levy	Gross Property Tax Rate (dollars of tax per $1,000 equalized value)[b]	Gross Tax on $50,000 House	Increase in Tax on $50,000 Home as a Result of Open Space Acquisition	
					Absolute	Percent
Town of Pleasant Prairie...	$ 327,825,720	$ 479,510	1.4627	$ 73.14	$1.41	0.6
Kenosha County.....	2,805,948,110	11,076,835	3.9476	197.38	0.13	0.1
Kenosha Unified School District....	1,959,751,510	23,941,811	12.2168	610.84	0.57	0.1
Gateway Technical District.....	9,475,248,425	11,678,789	1.2326	61.63	0.01	--[c]

[a]The value of property to be acquired under the development-preservation plan is $1,835,000.

[b]This rate was calculated by dividing the property tax levy by the equalized value of property less the value of property to be acquired. Property tax relief is not reflected in this rate.

[c]Less than 0.1 percent.

Source: SEWRPC.

Table 38

HYPOTHETICAL EQUALIZED VALUE OF PROPERTY AND PROPERTY TAX RATES FOR 1983 ASSUMING OPEN SPACE ACQUISITION AS PROPOSED IN THE MAXIMUM DEVELOPMENT PLAN

Taxing Jurisdiction	Equalized Value of Property Less Value of Property to be Acquired[a]	Property Tax Levy	Gross Property Tax Rate (dollars of tax per $1,000 equalized value)[b]	Gross Tax on $50,000 House	Increase in Tax on $50,000 Home as a Result of Open Space Acquisition	
					Absolute	Percent
Town of Pleasant Prairie...	$ 329,488,120	$ 479,510	1.4553	$ 72.77	$0.04	0.1
Kenosha County.....	2,807,610,510	11,076,835	3.9453	197.27	0.02	--[c]
Kenosha Unified School District....	1,961,413,910	23,941,811	12.2064	610.32	0.05	--[c]
Gateway Technical District.....	9,476,910,825	11,678,789	1.2323	61.62	--[d]	--[c]

[a]The value of property to be acquired under the maximum development plan is $172,600.

[b]This rate was calculated by dividing the property tax levy by the equalized value of property less the value of property to be acquired. Property tax relief is not reflected in this rate.

[c]Less than 0.1 percent.

[d]Less than $0.01.

Source: SEWRPC.

implemented, a property owner with a $50,000 home in the Town of Pleasant Prairie would pay $1.12 more in local property taxes because of the loss of the tax base, given the 1983 tax levies of the four taxing jurisdictions. Similarly, a property owner in the Kenosha Unified School District but outside the Town of Pleasant Prairie with a $50,000 home would pay $0.71 more; in Kenosha County outside the Kenosha Unified School District, $0.14 more; and in the Racine and Walworth County portions of the Gateway Technical Institute District, $0.01 more.

Table 39

SUMMARY OF IMPACT OF PROPERTY TAX REVENUE LOSS ASSUMING IMPLEMENTATION OF ALTERNATIVE DEVELOPMENT PLANS FOR THE CHIWAUKEE PRAIRIE-CAROL BEACH AREA

House Location	Increase in Annual Property Tax on a $50,000 House[a]		
	Maximum Development Plan	Maximum Preservation Plan	Development-Preservation Plan
Town of Pleasant Prairie.....	$0.11	$3.20	$1.12
Kenosha Unified School District Outside Town of Pleasant Prairie....	0.07	2.03	0.71
Kenosha County Outside Kenosha Unified School District.....	0.02	0.40	0.14
Racine and Walworth Counties Within Gateway Technical Institute District.....	--[b]	0.03	0.01

[a]Using the 1983 equalized value and tax levies as a basis for computation.

[b]Less than $0.01.

Source: SEWRPC.

Under the maximum development plan, real property having a combined assessed value of $172,600 would be acquired. This represents 0.05 percent of the current equalized value of the Town of Pleasant Prairie, about 0.01 percent of the equalized value of the Kenosha Unified School District, less than 0.01 percent of the equalized value of Kenosha County, and less than 0.01 percent of the equalized value of the Gateway Technical Institute District. If the open space acquisition proposals of the maximum development plan were to be fully implemented, a property owner with a $50,000 home in the Town of Pleasant Prairie would pay $0.11 more in local property taxes because of the loss of the tax base, given the 1983 tax levies of the four taxing jurisdictions. Similarly, a property owner in the Kenosha Unified School District but outside the Town of Pleasant Prairie with a $50,000 home would pay $0.07 more; in Kenosha County outside the Kenosha Unified School District, $0.02 more; and in the Racine and Walworth County portions of the Gateway Technical Institute District, less than $0.01 more.

CONCLUDING REMARKS

This chapter has presented three alternative plans--a maximum development plan, a maximum preservation plan, and a development-preservation plan--believed to be representative of the basic options available for development-preservation in the Chiwaukee Prairie-Carol Beach area.

Of the three alternative plans, the maximum development plan envisions the highest level of development--1,090 acres, or 60 percent of the study area developed for urban purposes; the highest population level--about 5,922 persons under full development conditions; and the highest public improvement costs--about $14.8 million for sanitary sewer, water supply, storm drainage, and street improvements. The extensive development envisioned under this alterna-

tive, however, would result in a substantial loss of natural resource values within the study area. Of the 717 acres of special value wetlands in the study area, about 37 percent would be destroyed under this alternative. About 98 acres of land would be acquired in the public interest and be permanently preserved. The cost of acquiring this land is estimated at $172,600. This acquisition would reduce the equalized value of the Town of Pleasant Prairie by about 0.05 percent and add $0.11 to the tax bill of the owner of a $50,000 home in the Town.

Of the three alternative plans, the maximum preservation plan envisions the lowest level of development--650 acres, or 36 percent of the study area developed for urban purposes; the lowest population level--about 2,880 persons under full development conditions; and the lowest public improvement costs--about $8.5 million for sanitary sewers, water supply, stormwater drainage, and street improvements. The maximum preservation plan envisions the most extensive preservation of open space among the alternative plans, thereby affording the greatest level of protection to the identified natural resource values of the area. Nearly all of the 717 acres of special value wetlands in the study area would be preserved under this alternative. About 444 acres of land would be acquired in the public interest for preservation. The cost of acquiring this property--including 62 housing units within the open space preservation area--is estimated at $5.2 million. This acquisition would reduce the equalized value of the Town of Pleasant Prairie by about 1.6 percent and add $3.20 to the tax bill of the owner of a $50,000 home in the Town.

The development-preservation plan stands as a middle ground between the maximum development plan and the maximum preservation plan. This plan envisions that 841 acres, or 46 percent of the study area, will be allocated to urban use. In addition, this plan envisions a population level of 4,305 persons under full development conditions; and public improvement costs of about $11.7 million for sanitary sewers, water supply, stormwater drainage, and street improvements. The plan represents a conscious attempt to accommodate significant additional urban development within the area, while preserving the most important natural features of the area. The plan would preserve about 90 percent of the special value wetlands in the study area. Under this alternative, 295 acres of land would be acquired in the public interest for preservation. The cost of acquiring this property--including 14 housing units within the open space preservation area--is estimated at $1.8 million. This acquisition would reduce the equalized value of the Town of Pleasant Prairie by about 0.6 percent and add $1.12 to the tax bill of the owner of a $50,000 home in the Town.